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TOXIC AND INFECTIVE JAUNDICE*

BY

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In opening this discussion on toxic and infective jaundice I am proceeding on the assumption, now pretty generally accepted, that the parenchymatous cells of the liver have nothing to do with the formation of bile pigment, that the pigment is derived from haemoglobin liberated from more or less effete red corpuscles, and that the transformation of haemoglobin into what I may call pre-hepatic bilirubin is attributable to the activity of cells of the so-called reticulo-endothelial system. In this conception the liver is regarded as playing the part of an excretory organ for bile pigment, though in passing through the liver cells some subtle alteration in the physico-chemical nature of the bile pigment takes place, since what may be termed post-hepatic bilirubin has slightly different characters from its pre-hepatic precursor.

The Three Types of Jaundice

Staining of the skin and tissues by bile pigment—for this is what is meant when we employ the word "jaundice" in clinical medicine—may arise in three different ways. The first is when some gross obstruction to the escape of bile into the intestine leads to the damming up of bile in the excretory ducts with subsequent absorption of bile into the blood stream—the so-called obstructive jaundice. Here not only is there absorption of post-hepatic bilirubin but of bile salts and cholesterol. Some observers have thrown doubt on the reabsorption of these substances, pointing out that when a pressure of from 250 to 300 mm. of water is attained in the bile ducts the excretion of bile pigment ceases, and that this is sufficient to explain the occurrence of staining of the tissues in obstructive jaundice. The second way is when excessive blood destruction leads to the accumulation in the blood stream of such a large amount of pre-hepatic bilirubin that the excretory function of even a healthy liver is overpowered—the so-called haemolytic jaundice. And the third way is when the liver itself is damaged, so that it becomes unable to work at its normal level—the so-called toxic or hepatogenous jaundice. It is with this last type of jaundice alone that we are concerned.

Among the poisons which act by damaging the liver cell are phosphorus, arsenic, antimony, chloroform, carbon tetrachloride, trichlorethane, toluylenediamine, aniline, benzene, cinchophen derivatives, and certain mushroom poisons. Microbic activity may be responsible, as in the jaundice of pyaemia, septicaemia, pneumonia, and typhoid; or protozoal infections, as in spirochaetal jaundice, malaria, and syphilis. In other instances a virus may be the offending agent, as in yellow fever with or without a secondary microbic infection, while yet again some autogenous toxin may be responsible, as in toxaemia of pregnancy, some cases of acute yellow atrophy, and perhaps Hanot's cirrhosis. Anoxaemia probably plays an important part in the jaundice of congestive cardiac failure.

Pathology of Toxic Jaundice

Whereas in obstructive jaundice the sufferer is likely to be more jaundiced than ill, in toxic jaundice he is likely to be more ill than jaundiced, though deep jaundice is sometimes seen. Except in the most severe cases the stools remain fairly normal in colour. Fever is usually an accompaniment of toxic jaundice, though in some of the most serious forms, such as acute yellow atrophy, the temperature may be subnormal. Varying quantities of bile may be found in the urine in addition to urobilin and albumin; bile-stained casts and sometimes red blood corpuscles are likely to be present, while the excretion of amino-acids may be raised. In severe cases the blood sugar falls, and in a case known to me in which severe liver damage ended in convulsions the blood sugar fell to nearly 70 mg. per 100 c.cm., while daily examination showed a steady fall of non-protein nitrogen, a condition reminiscent of Mann and Magath's experiments on dogs. In spirochaetal jaundice there may be an increase in blood urea owing to coincident damage to the kidney.

Pathologically the essential lesion in toxic jaundice consists in damage to the parenchymatous cells of the liver. In some instances there is an associated cholangitis. When the injurious agent acts upon the liver in massive doses acute necrosis of the parenchymatous cells results, and the case is usually referred to clinically as one of acute necrosis of the liver, acute toxic hepatitis, or acute yellow atrophy. When the injurious agent is less virulent and reaches the liver in smaller amounts over a greater length of time a much more gradual change is induced in the liver cell and a gradual replacement fibrosis results, with the production of chronic hepatitis or cirrhosis of the liver. Thus, according to present-day conceptions, acute yellow atrophy at one end of the scale and cirrhosis of the liver at the other fall into line. A great deal of variation is seen in the post-mortem appearances of fatal cases of toxic jaundice. Thus in cases of phosphorus poisoning when

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the person has survived long enough to have developed jaundice the liver is usually greatly increased in size, doughy in consistency, and yellow in colour. When examined microscopically an excessive fatty infiltration, progressing from the periphery of the lobule towards the central zone, is the outstanding feature, and the liver cells, although undergoing autolytic and necrotic changes, are seen to retain their nuclei till a relatively late period. In acute yellow atrophy, on the other hand, the liver, except in the most virulent type of case, is found to be reduced perhaps to as much as a third of its normal size, and its capsule shows a wrinkled appearance. On section the normal liver pattern can be no longer distinguished, and, except in the most acute cases, red patches sharply marked off from the more general yellow groundwork are a noticeable feature. The older the lesion the greater is the predominance of these red areas. Microscopically the yellow portions are seen to consist of the remains of liver cells in all stages of disintegration, from parenchymatous and hydropsical swelling with bile precipitation to complete necrosis and fusion of cell remains in which no nuclei can be distinguished. The red areas show widely dilated capillaries, engorged and often ruptured, together with newly formed granulation tissue and groups of such liver cells as have survived showing active hyperplasia.

Catarrhal Jaundice: Obstructive or Hepatic?

Following the teaching of Virchow, ordinary catarrhal jaundice, till recent years, has been regarded as a form of obstructive jaundice. Its onset is frequently associated with gastro-intestinal disturbance, and it has been assumed that obstruction arises from inflammatory swelling of the mucosa at the ampulla of Vater or from infection ascending the common bile duct. In some cases of catarrhal jaundice ending in death from some other cause a plug of mucus capable of producing mechanical obstruction has been found on post-mortem examination. Sir Arthur Hurst has collected quite a few instances from the literature. It is pointed out that, while catarrhal jaundice shows itself mostly in the form of sporadic cases, instances of a disease indistinguishable from it clinically, yet occurring in epidemic form, are not uncommon. Several members of a family may be attacked, or it may break out in schools, institutions, or barracks. It is held to be an infective disease in which damage to the liver cells is the essential pathological lesion, though whether infection occurs by way of the common bile duct or by the blood stream has not been determined.

Perhaps I may be allowed to digress for a few moments to mention a few points worthy of consideration in connexion with the epidemic form of the disease. The incubation period has generally been regarded as one of a few days, but recent observations would suggest that an incubation period of from three to five weeks is more probable. In an outbreak among nurses at the London Fever Hospital in which five cases occurred, twenty-one days appeared to be its duration. It is not surprising, with an incubation period as long as this, that persons exposed to a common source of infection and who eventually develop jaundice within three or four days of one another should appear to have infected each other within those few days. In some epidemics nasopharyngeal catarrh has been noticed, and there is a certain amount of evidence to suggest that the infection is air-borne from case to case, though the actual nature of the infecting material is unknown. Cultures of blood, stools, and urine have so far failed to reveal any infecting organism. Dr. Alison Glover furnished an interesting account of an outbreak of epidemic catarrhal jaundice in a public school of seven houses and some 400 boys in which the evidence appears strongly to suggest that transmission was usually by naso-pharyngeal "droplet" infection and that it was favoured by intimate contact, especially in sleeping quarters. That some cases in the outbreak were due to infection by swimming-bath water was possible, but he concluded that in the majority of these cases the initial pyrexia was noticed after, and attributed to, swimming (*Lancet*, 1931, **1**, 722).

But to resume. As there appears to be no striking difference between catarrhal jaundice occurring sporadically and cases arising during an epidemic, it has been suggested that all cases of so-called catarrhal jaundice are in reality cases of primary liver damage; that is to say, that damage to the liver cell is the fundamental lesion, though it may vary as to severity and extent within wide limits. It is only on rare occasions that help in deciding this difficulty can be had from post-mortem findings. Schrumpf in 1932 obtained a portion of the liver at an operation on the eighth day of what was considered to be a case of catarrhal jaundice, and described the changes found as resembling "acute yellow atrophy in miniature." Gaskell in 1933 had an opportunity of examining a portion of liver from a case of catarrhal jaundice which ended in death from another cause on the third day, and found an acute hepatitis with degeneration of liver cells, and, more recently, I understand that Dr. Hugh Barber of Derby has recorded his findings in another case. In Gaskell's case the bile ducts showed their epithelial lining to be intact and appeared not to be involved in the inflammatory process.

On the other hand, Eppinger (quoted by Hurst), although having previously come to the conclusion that catarrhal jaundice was the result of hepatic disease and was not obstructive, was disillusioned to find the mouth of the common bile duct completely obstructed as the result of inflammatory swelling of its wall in the case of a girl suffering from a typical attack of catarrhal jaundice who had died from a fractured skull. On microscopical examination the liver and pancreas in this case were found to be normal. Moreover, we have to recognize that even severe damage to the liver can occur without giving rise to jaundice. Dr. Hugh Barber has reported the post-mortem findings in five cases of dioxan (diethylene dioxide) poisoning in factory workers. After a fatal illness lasting from five to eight days in no case was there jaundice to indicate liver damage, though, microscopically, complete necrosis of the inner half or often two-thirds of each lobule was revealed.

The Possibility of Two Forms of Catarrhal Jaundice

When we come to clinical considerations evidence is not wanting of the close association of catarrhal jaundice and acute necrosis of the liver. Every general physician of experience encounters from time to time cases of what appears to be ordinary catarrhal jaundice in which, after a shorter or longer period, the patient becomes profoundly ill, exhibiting restlessness and then increasing drowsiness, subsultus tendinum, and what used to be called the "typhoid state," with perhaps purpura or bleeding from the nose, stomach, or kidney. Examination shows a greatly reduced area of liver dullness with albumin and casts in the urine, and perhaps leucine and tyrosine in addition. In other words, the clinical picture of acute yellow atrophy or necrosis of the liver is revealed. Sir William Willcox estimates that about 0.4 per cent. of cases of catarrhal jaundice end in this way. This being

so, must every case of catarrhal jaundice be regarded as a potential case of acute yellow atrophy? Possibly the pendulum has swung too far. Hurst meets the difficulty by suggesting that there are really two forms of catarrhal jaundice: (1) catarrhal jaundice proper, in which blocking of the common bile duct occurs secondary to an acute gastro-duodenitis; (2) mild forms of subacute hepatic necrosis. In distinguishing between these two forms stress is laid on the mode of onset. In the obstructive form the initial symptoms are those of an acute gastritis—epigastric discomfort, complete anorexia, nausea, vomiting if the patient eats, and sometimes diarrhoea. He feels ill, and the temperature is raised. In two or three days improvement sets in, and just when he thinks he has almost recovered the urine becomes dark, the stools pale, and the conjunctivae and skin jaundiced. The temperature now falls, and by the time jaundice has fully developed he feels perfectly well, except that he is nauseated and vomits if he partakes of fatty food. At this stage epigastric tenderness has disappeared, though the liver may be slightly enlarged and tender and the gall-bladder and spleen may be palpable. The jaundice generally begins to fade within a week, and by the end of a fortnight all symptoms and signs have disappeared. Occasionally the jaundice lasts longer, and in rare instances may persist for two or three months.

In the second type—mild subacute hepatic necrosis—Hurst states that no pre-icteric symptoms of any kind are found in most cases, but the patient notices that his urine is becoming dark and subsequently that the stools are pale, and jaundice then appears. The onset of jaundice is accompanied by symptoms of general toxaemia, headache, weakness, anorexia with occasional vomiting, and diarrhoea. The temperature is generally slightly raised. There is no epigastric tenderness, though the liver may be tender and slightly enlarged, and the spleen is always palpable. The jaundice is generally less marked than in the first variety, and some bile is always present in the stools. The jaundice may last between a week and two or three months. In rare cases the disease is not arrested, and death results from subacute hepatic necrosis or, at a much later date, from cirrhosis of the liver.

Personally I find a little difficulty in agreeing to the statement that no pre-icteric symptoms of any kind are found in most cases of this type. I admit that my experience is of necessity limited, for a physician rarely has an opportunity of seeing cases at the initial onset of the disease, but in cases that I have seen of epidemic catarrhal jaundice the attack has been ushered in with fever four or five days before the jaundice appeared, while nausea, vomiting, anorexia, headache, and discomfort in the upper part of the abdomen have shown themselves in the pre-icteric period. How these manifestations are to be distinguished from the symptoms of acute gastritis which Hurst emphasizes as preceding the other variety—the obstructive form of catarrhal gastritis—I find it hard to determine. I am not convinced that the two forms of the disease do not exist, but I find it difficult, from a consideration of the mode of onset, to get much help in distinguishing between these two types of so-called catarrhal jaundice. If I were pressed to try to distinguish between them I should stress the greater depth of jaundice and the paler colour of the stools as favouring a blocked duct, and the enlargement of the spleen as being more constant in mild subacute hepatitis. On theoretical grounds one would expect in the early stages of a blocked duct a prompt direct van den Bergh reaction, and a biphasic reaction in the case of the mild subacute hepatitis, but I doubt if the test is reliable enough to be trusted to cut the Gordian knot. Perhaps more may be claimed for the laevulose-tolerance test, more especially the new test as described by Stewart, Scarborough, and Davidson in the April (1938) number of the *Quarterly Journal of Medicine* (p. 229); but only four cases out of eight of catarrhal jaundice investigated gave abnormal curves, and it is interesting that in the case giving the highest icteric index—164—normal curves were obtained for both laevulose and total sugar.

Speculations concerning a Progressive Lesion

Before concluding there is one other point I should like to touch upon. Addis in his studies of Bright's disease has clearly shown the existence of long latent periods following an initial damage to the kidney (as by acute nephritis) when for years the affected person apparently remains in perfect health. In spite of this, careful tests of renal function have demonstrated the presence of a relentlessly progressive lesion which finally terminates in renal insufficiency and uraemia. Bloomfield, in the April number of the *American Journal of Medical Sciences* (p. 429), raises the interesting speculation whether something of the same sort may not hold in cases of hepatitis, supporting his contention by the fact that many people who have suffered from an attack of catarrhal jaundice show evidence of impaired hepatic function in the form of a high bilirubin content. Certainly one comes across cases of relapsing subacute hepatitis in which, after perhaps three or four attacks of jaundice spread over a couple of years, the final attack is attended by signs of portal congestion, ascites developing as in cases of multilobular cirrhosis before the final exitus. The speculation raised by Bloomfield makes one wonder whether a progressive though silent change of this sort may possibly explain the varying effect that alcohol exerts on different people. While some can partake of large quantities without apparent harmful effect, others gradually show indications of liver damage. It is a subject worthy of investigation.

Finally, may I say what a real contribution to clinical medicine would be made by anyone who would place on record the details of even a few cases of catarrhal jaundice followed from its onset to its termination.

I have only had time to put before you general conceptions of jaundice and to consider in any detail one form, and that the most common, of toxic jaundice, but many other aspects and varieties of toxic jaundice will be dealt with by succeeding speakers.

The Executive Committee and the Council of the International Union against Tuberculosis, whose secretary-general is Professor Fernand Bezançón, President of the Academy of Medicine, met in Paris at the headquarters of the Union, 66, Boulevard Saint-Michel, last month, under the chairmanship of Professor Lopo de Carvalho (Portugal). Delegates from sixteen countries attended this meeting. The administrative meeting of the Council was devoted to the preparation of the programme of the conference to be held in Berlin in September, 1939. The agenda of this conference is now definitely settled, and will include the following three subjects: the problem of the virulence of the tubercle bacillus, the value of systematic examinations for the diagnosis of pulmonary tuberculosis in subjects over 15 years of age, and the rehabilitation of the tuberculous. At the scientific meeting of the Council Professor Frölich (Norway) occupied the chair; Drs. Maingot, Cottenot, and Etienne Bernard submitted a report on radiological sections of the thorax and their value in the diagnosis of pulmonary tuberculosis, with diagrams and radiographs illustrating this subject. Before these sessions a meeting of the After-Care Committee of the International Union against Tuberculosis (secretary, Dr. Bachmann, Switzerland) had been held under the chairmanship of Sir Pendrill Varrier-Jones.

METHODS OF TESTING FOR COLOUR VISION AND THEORETICAL DEDUCTIONS FROM OBSERVATIONS ON COLOUR VISION*

BY

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Colour Discrimination

As the result of the work of many observers it has been established that in the spectrum there are two main maxima of colour discrimination, corresponding to the sensations of yellow and of blue-green. There may be some doubt as to the existence of one or more additional minor maxima (Corbett, 1936 ; Wright and Pitt, 1934). The method by which these conclusions have been established is by exposing two identical regions of the spectrum alongside each other and altering the wave-length of one until the two do not appear to match even after adjustment of the intensities has removed any difference in brightness.

At the two main maxima of discrimination the two lights can be recognized to be of the same colour in spite of differences in brightness, while at other wave-lengths a difference in brightness will cause a difference in colour even if the wave-lengths are the same (Roaf, 1927, 1932a ; Corbett, 1936). These two spectral regions have been studied to find out whether the sharpness of discrimination is related to any special recognition of these colours when there is no fixed wave-length with which to compare the colour.

Yellow Sensation

The subjects were asked to set a spectroscope so that the field of view appeared to them to be yellow. They were asked to alter the wave-length until the light seemed to be slightly tinged with orange, then to alter back until the light appeared to be slightly tinged with green. The wave-length difference between these two extremes measures the "range" of the "yellow" part of the spectrum, and the mid-point between the two wave-lengths can be called "mid-yellow"—that is, the centre between the two points where yellow just begins to be tinged with the next colour in the spectrum should be the purest "yellow" in the spectrum.

As the result of the examination of 100 individuals it was found that eighty-seven normal persons showed an average "range" of 67 ± 29A° and the "mid-yellow" was at 5853 ± 38A°, while thirteen of the subjects had defective colour vision and possessed an average "range" of 314 ± 168A° with a "mid-yellow" at 5547 ± 237A° (Hailwood and Roaf, 1937–8). The narrower the "range" of wave-lengths over which the colour is seen the greater is the power of discrimination. These figures confirm the conclusion, arrived at as the result of measurements of discrimination, that those with defective colour vision do not show a maximum of discrimination in the "yellow" region of the spectrum.

Blue-green Sensation

Comparable observations were made in which the subjects were asked to mark out the "blue-green" region by making the field first distinctly bluish and then distinctly greenish. The average "range" of the "blue-green" was 61.7 ± 34.4A°, and the "mid-blue-green" was situated at 4926 ± 51A° for 100 cases. Of these cases nine had defective colour vision as shown by the Ishihara test. These nine persons gave an average "range" of 81 ± 54A° with a "mid-blue-green" of 4965 ± 67A°. These figures confirm the conclusion that those with defective colour vision have no difficulty in distinguishing colours produced by this region of the spectrum (unpublished experiments by Mrs. J. C. Hay).

We cannot say that there are not individuals who have defective colour vision for this region of the spectrum, as ten cases showed a range of more than 100A° (one actually 207A°), but only one of these was classified as having defective colour vision. The reason may be that the Ishihara test is designed to detect the usual type of red-green confusion, hence it might not detect a failure to discriminate in the "blue-green" region of the spectrum. The mere width of the "range" does suggest a lower degree of discrimination by these subjects in this region of the spectrum, provided they have realized that the first clearly recognized difference in colour should be noted. The recorded figures are the medians from five separate readings for each limit of "range."

Tests for Defective Colour Vision

The importance of colour recognition for railway, marine, and aeroplane signalling has led to the use of many methods of testing. Of these the fundamental method is some form of lantern, as the recognition of coloured lights is necessary in all the above services (Edridge-Green, 1920). Owing to the low visibility of "blue" light and the deficiency in "blue" rays of many sources of illumination not much attention has been paid to the distinction between blue and green. ("Signal green" is really a "blue-green" allowing all the spectrum except the "red" to pass through.) The distinction is between red, yellow, and green. (White is not distinguished from yellow because many sources of light—for example, a paraffin lamp—are really yellow.)

Distinction between different degrees of defective colour vision may be made by using diaphragms of different areas, by altering the intensities of the light, and by changing the duration of the exposure of the light (Guttman, 1907, 1908). The duration of the exposure requires further study, and a preliminary examination of this factor has been made by Corbett and Roaf (1937). The new lantern devised for testing colour vision in the Navy makes use of the variations in area and intensity but does not change the duration of exposure.

By means of the spectroscope we can measure the extent of difference in wave-length necessary to produce a recognizable difference in colour in the "yellow" region. "Ranges" greater than 100A° suggest defective colour vision, but all subjects with these "ranges" do not make mistakes with the lantern or other tests.

The Nagel anomaloscope based on Rayleigh's observations (1881) enables us to test the match between a fixed "red" + a fixed "green" with a fixed "yellow." In the examination of 100 subjects all those (thirteen in number) who made abnormal readings could be classified as possessing defective colour vision, and all those who made the match within the normal range had normal colour vision. It is difficult to reconcile these results with the statement made that those with dichromatic vision will agree with the normal match but will also agree with an abnormal match. Perhaps there is some systematic defect in the anomaloscope method, otherwise some of the

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subjects should have made settings in the normal region. Perhaps these subjects with defective colour vision were not dichromatic cases, but in that event defective colour vision does not correspond to dichromatism. On the other hand Pitt (1935) gives matching curves with two colours by subjects with dichromatic vision. There seems to be some need for an explanation of the fact that persons with defective colour vision are not always satisfied with the match made by a normal person.

Pseudo-isochromatic Plates

The introduction of coloured plates on which a normal person could see a design which was not visible to the individual with defective colour vision was due to Stilling. Ishihara's plates are probably the best to use. Dr. Collins found that in an examination of 379 persons no normal persons made a mistake with No. 2, 3, 7, 8, or 9, and that no individual with defective colour vision could see the number read by the normal person in No. 6 or 11. The degree to which the other plates were reliable in distinguishing normal from abnormal subjects is given (Collins, 1937).

Ishihara's plates are formed of small disks which vary in area and in purity of colour, so that when they are made into a design this can be recognized only by the colour. Any recognition of the design by differences in intensity is rendered impossible because the same colour may be present in different degrees of purity—that is, with more or less white in it—so that the disks appear paler or darker. In addition, the variation in area of the disks tends to confuse anyone who does not recognize the difference in wave-length composition of the reflected light.

The whole test is based on the outstanding psychological value of red for the normal person while the individual with defective colour vision cannot distinguish red from green. As those with defective colour vision can distinguish blue from green, blue is introduced to make designs which are not noticed by the normal person because of the outstanding effect of red on him.

The reason why a person with defective colour vision sees a different design from that seen by a normal subject is that he classifies the colours differently, as shown in the following table:

	Colours classed together	but distinguished from
Normal person ..	Yellow-red or vermilion and blue-red or carmine	Yellow-green and blue-green
Person with defective colour vision	Vermilion and yellow-green	Carmine and blue-green

The only exceptions are plates 12 and 13, which are said to distinguish "red-blindness" from "green-blindness." Two red figures are seen on each of these plates by the normal person. If red as such is not distinguished, neither number will be seen, as can be proved by looking at them through a blue-green light filter. One figure in each case is vermilion and lighter in shade than the other, which is a dark carmine or mauve. The blue in this latter makes it look to the normal person more like the blue-grey of the background spots. The vermilion number is said to be seen by the "green-blind," while the mauve number is said to be seen by the "red-blind."

This difference may be due to a decrease in sensitivity to the "red" end of the spectrum in scoterythrous (protanope) cases.

The vermilion disks reflect mainly "red" light, the mauve disks reflect "red" and "blue" light; hence a decrease in sensitivity to "red" will cause a greater relative decrease in brightness of the vermilion disks. The number formed by the vermilion disks may thus fade into the background. The mauve disks reflecting "blue" light may not be so much decreased in brightness because of the "blue" light reflected, hence the number formed by the mauve disks becomes visible. The number seen by the "green-blind" actually reflects less "blue" than that seen by the "red-blind."

Up to the present no evidence has been brought forward to explain why different numbers are seen in plates 12 and 13 by different individuals with defective colour vision.

Binocular Colour Fusion

Each eye can give rise to an independent judgment of intensity, colour, and shape. When both eyes are used combination of the results may occur, in a similar manner to that in the spinal cord. With low intensities summation is possible, as shown by Lythgoe and Phillips (1937–8). At higher intensities occlusion may be present, hence a landscape may appear darker with both eyes than with one eye. If a neutral glass is placed in front of one eye, that eye being obstructed by an opaque screen, it is found that when the opaque screen is removed the landscape appears darker, whereas it ought to appear brighter because the impulses from the unobstructed eye are reinforced by further impulses from the eye which has just been exposed by removal of the screen. This effect is observed over a certain range of illumination. If the neutral glass is too opaque or too transparent the difference in darkness is not observed. This experiment suggests some sort of compensation between the impulses coming from the two eyes, which, of course, is analogous to occlusion.

By presenting different colours to each eye it is possible to obtain an addition of the sensations very similar to the result of simultaneous stimulation of one eye by the two colours. Thus if the intensities of the two colours are properly adjusted a red screen in front of one eye and a green screen in front of the other produce a yellow sensation (McDougall, 1901). This shows that the sensation of yellow is due to fusion behind the optic chiasma and that Hering's hypothesis cannot be true of retinal processes, although it may apply to cerebral interpretation of nerve impulses.

By such types of experiment it is hoped to be able to distinguish between the effect of different stimuli on common receptors in the eye and the effect of impulses from different receptors on a common interpreting mechanism (Roaf, 1928, 1932b). A practical application of binocular colour fusion might be to train individuals with defective colour vision to recognize colours by the use of a tinted colour filter in front of one eye.

Conclusion

In this paper an attempt has been made to point out the difference between normal and defective colour vision, to describe the means of detecting defects in colour vision, and the possibility of compensating for defects in colour vision by binocular fusion of colours. The usual type of defective colour vision is a failure to distinguish red, yellow, and green—that is, red-green confusion. There is no failure to distinguish blue from green. We can say that the normal person and the hypochromat distinguish blue from not-blue. The normal person distinguishes red from not-red. That which is neither red nor blue is called green. The hypochromat does not distinguish red from not-red, and anything which

is not blue he tends to call yellow, as that is the brightest part in the not-blue region of the spectrum.

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SOME CARDIOLOGICAL FALLACIES

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Even to-day unfounded beliefs regarding cardiovascular disease appear to be so widespread in the profession that we think it worth while to discuss some of the commonest of them in a short paper.

Fatty Heart

For a number of reasons, into which it would take too much time to enter, all obese people tend to become short of breath on exertion. On this account alone a diagnosis of "fatty heart" is often made. In post-mortem examinations of the obese—and not only of the obese—it is not unusual to find fat stored in and around the heart, but during life its presence can so rarely be proved to give rise to cardiac insufficiency that it is never wise to make the diagnosis. When definite symptoms of cardiac insufficiency are present in an obese patient another cause for them should be sought. The commonest by far is hyperpiesis, but there are, of course, others.

Physical Strain

The belief that a healthy heart can be injured by physical strain still unfortunately persists, in spite of the immense amount of work that has been done on the subject during the last thirty years. The truth of the matter has never been better put than by Lewis (1937) when he says: "It is reasonable to conclude that the burdens imposed by physiological acts upon the normal heart, however heavy these burdens may be, never injure the heart and fibres, never produce injurious dilatation, and never exhaust the heart's reserve." That the heart tends to be a little larger and rounder than the average in persons who habitually do hard physical work is not denied, but it is a normal and healthy reaction of the muscle to exercise and no more to be accounted pathological than the hypertrophy of, say, their biceps.

There is a corollary to this: Every now and then one sees a patient in consultation whose heart, according to his medical attendant, has recently dilated enormously within the space of a few minutes or, at most, a few hours, usually, though not always, as a result of effort, and has returned to its normal size, either with rest or through his treatment, just as rapidly. Such acute dilatation of the heart, in our experience, never occurs. In this connexion it is interesting to observe that in a prolonged attack of "paroxysmal tachycardia," in which the heart beats continuously at a rate of over 200 a minute, appreciable enlargement—when it develops—is a matter of several days.

Screening the Heart

Even in a patient neither emphysematous nor obese it is impossible to estimate the transverse diameter of a heart with any accuracy by percussion—one has only to screen a normal chest in the lateral or oblique position to be persuaded of this. And, supposing it were, no one has ever suggested that the depth of a heart—a very important matter in cases of mitral stenosis, congenital morbus cordis, etc.—can be estimated by this means. Yet not only can both of these points be elucidated by screening, but a reasonably accurate estimation of the size of each individual chamber of the heart—surely a consummation earnestly to be desired—is as a rule easily made by this means.

Displacement of the apex beat to the left, where this cannot be attributed to pulmonary causes, though very suggestive of an enlarged heart, is not absolutely diagnostic. Scoliosis, even of so slight a degree as to be only recognizable by radiography, is a fruitful cause of such displacement. Again, a high diaphragm—the constant accompaniment of obesity—by causing the lie of the heart to become more transverse, tends to produce it. Through ignorance of these facts on the part of medical men, multitudes of healthy people are accounted victims of heart disease who, were their hearts screened by anyone conversant with the technique, could be safely assured as to the integrity of that organ.

Enlargement and Dilatation

The heart is generally believed to increase in size with age, as a normal process. There is no evidence for this. It may even diminish in size. When it is found to be enlarged in old age another cause should be looked for—for example, hyperpiesis, bundle-branch block, etc.

It is almost an article of faith in the profession that in all toxaemic states of any severity there is necessarily some dilatation of the heart through flabbiness of its musculature. It is forgotten that in cases of very advanced phthisis where there has been the severest degree of toxaemia for months or years the heart in life usually appears smaller than normal under the screen, and at necropsy is found to be wasted, perhaps, but not dilated. Again, in a recent radiological study of 119 hearts in pneumonia by Davies, Hodgson, and Whitby (1935), definite enlargement was witnessed in no more than three.

It is, we believe, practically only when auricular fibrillation, auricular flutter, or heart-block develops in the course of toxaemia that the heart dilates. Circulatory failure, when it occurs in toxaemia, is in our opinion almost always due to loss of contractility of the muscular coat of the peripheral arterioles and not to myocardial weakness.

Contrary to common belief, in cases of congestive failure the size of the heart does not materially decrease as the signs of failure diminish and disappear. A generation ago Mackenzie, estimating the size of the heart by clinical methods, came to this conclusion. Latterly Palmer (1937) has established the truth of it by radiological methods.

Oedema which is not accompanied by enlargement of the heart is practically never cardiac in origin. It must be borne in mind, however, that such enlargement may not be obvious clinically and that radiological examination of the heart may be required before it can be detected—for example, in emphysema and obesity.

Heart Sounds and Extrasystoles

A heart is often unjustly condemned because in the opinion of the examiner the sounds are "weak," "toneless," "of poor quality," or the like. The *character* of heart sounds, whether first or second, is on occasions of great help in the diagnosis of cardiac conditions, but the idea that one can gauge the functional efficiency of a heart by the *loudness* of the sounds is altogether fallacious. Dulling of heart sounds is far more often due to obesity or emphysema, or to both, than to a feeble myocardium. In addition chests possess very different acoustic properties, and listeners differ greatly, not only in the acuity of their hearing but also in their standards of normality.

Even at the present time many practitioners regard extrasystoles as an indication of organic disease of the heart—to the great hurt of their patients. As Mackenzie (1918) pointed out, extrasystoles are in themselves of no clinical significance, and seldom, if ever, are they harbingers of auricular fibrillation or any other grave cardiac condition. After middle age they may be considered almost a normal phenomenon. When present in a case of organic disease of the heart—as they often are—they may be safely ignored in assessing the seriousness of the condition and in considering the prognosis.

Rheumatism

It is well known that acute rheumatism is comparatively rare in adult life. It is not so well known that a first attack which develops after the age of 20 seldom causes permanent damage to the heart and that, below this age, the nearer a patient is to it the less likely is his heart to be affected.

One is often asked during or at the end of a first attack of acute rheumatism whether the heart of the patient is affected or not. It is frankly impossible to answer this question. The presence of a systolic bruit at the apex is of little help. A transient systolic bruit is a commonplace in any severe toxaemia, and a systolic bruit in a first attack of acute rheumatism may be no more than this; moreover, a patient in whom at the end of the attack no bruit of any kind whatever is audible may a year or two later exhibit definite signs of valvular disease.

The scarring of the valves which follows their inflammation, and to which mitral stenosis, aortic regurgitation, and aortic stenosis are due, is a slow process, and it is almost certainly six months at least, and generally much longer, before it has advanced sufficiently to produce recognizable signs of these conditions. When, during the course of a supposedly first attack of acute rheumatism, definite signs of valvular disease are discovered, it can be laid down with certainty that the patient has had a previous attack, even if it has gone unnoticed.

Systolic Murmurs

Mitral regurgitation, unaccompanied by mitral stenosis, seldom, if ever, occurs as a result of rheumatic endocarditis. Contrary to current teaching, a *systolic* murmur at the mitral area is the commonest murmur in mitral stenosis, not a presystolic. This fact has been firmly established in recent years by radiological examination of the heart, although Graham Steell drew attention to it as long ago as 1906. It is the long, blowing, apical systolic murmur in a patient who gives a history of previous acute rheumatism which is especially suspect. "Functional" apical systolic murmurs are typically short and non-blowing in character. In no branch of cardiology is fluoroscopy more useful than in determining the significance of systolic murmurs.

Dizziness, Faintness, and Syncope

Dizziness, faintness, and syncope are not *cardinal* symptoms of heart disease. That they can occasionally result from it is not denied—unconsciousness, for example, occurs in some, though by no means all, cases of high-grade heart-block and, more rarely, at the onset of an attack of auricular fibrillation, auricular flutter, or coronary thrombosis—but far more often they are symptomatic of a vasomotor disturbance of psychoneurotic origin. Neither is exhaustion or a feeling of tiredness a cardinal symptom of heart disease.

It cannot be laid down too strongly that the cardinal symptoms of heart disease are two, and two only: (i) shortness of breath on exertion, and (ii) pain, usually retrosternal, though sometimes in such situations as we describe elsewhere in this paper.

Pain

The pain of angina pectoris is typically retrosternal, not precordial, as is commonly believed. It tends to radiate across the front of the chest, often to the left shoulder and axilla, in many cases down the left arm as far as the elbow or even the fingers, sometimes down both arms or down the right arm only, and upwards to the neck on one or both sides. It may involve the jaw, it may spread to the back, it may have other situations and distributions, yet hardly ever is it situated below the left breast. Wherever it is or whatever its spread, it cannot be laid down too strongly that it is almost invariably brought on by exercise and relieved by rest.

The pain in an attack of angina pectoris may vary in different patients or in the same patient at different times from a dull ache to an agonizing feeling of constriction involving the whole thorax. It is never "stabbing" in nature.

Left submammary pain is very rarely due to heart disease, even though it may sometimes extend to the left scapula and, by way of the left supramammary region and left shoulder, to the left arm. Such pain is persistent, aching in character, and not induced, though it may be increased, by exercise. It is usually associated with a group of symptoms indicative of physical and nervous exhaustion which have no organic basis (Baker, 1930). Such symptoms do, of course, also occur in patients with cardiovascular disease—for example, mitral stenosis or aortic incompetence—for it is only natural that such patients should tend to develop anxiety states.

Coronary Thrombosis

One has often found a practitioner doubtful if a coronary thrombosis has occurred in a patient who has

experienced all the typical symptoms, because, on clinical examination of the heart, he can find no changes of any kind whatever. It may be interesting for such a one to know that, though a coronary thrombosis can give rise to any of the known arrhythmias, in the majority of cases the rhythm remains regular, no bruits are produced, and no increase in the size of the heart can be demonstrated even by radiological methods.

It is commonly believed that an electrocardiogram taken after a coronary thrombosis *invariably* shows characteristic abnormalities. This is not so. Very occasionally it is normal in every particular. Again, a reversed T wave in Leads I and II is not *invariably* a sign of coronary disease. It occurs sometimes in severe grades of aortic stenosis and hyperpiesis.

Coronary thrombosis very seldom occurs as a result of syphilitic aortitis, in spite of the fact that in this latter condition narrowing of the orifices of the coronary arteries is almost the rule.

Some Further Points

That a patient's systolic blood pressure reckoned in millimetres of mercury should equal 100 plus his age in years is still an article of faith in many quarters. Mass statistics now available prove that this is not the case. The blood pressure should normally rise only slightly with increasing age. This is evidenced by the fact that in normal people the increase between the ages of 20 and 60 is no more than 15 mm.

Atheroma is never a cause of high blood pressure, though there is little doubt but that the latter ultimately tends to lead to atheromatous degeneration of the arteries.

Syphilis never causes a *general* arteriosclerosis. The arterial involvement in syphilis is invariably focal.

It should always be borne in mind that aneurysm of the thoracic aorta scarcely ever causes dysphagia with regurgitation of food, although it may occasionally be accompanied by some discomfort in swallowing.

Auricular fibrillation is, curiously, very rarely associated with subacute bacterial endocarditis or syphilitic disease of the heart.

We would acknowledge our indebtedness for many of the points we have stressed to the late Sir James Mackenzie, with whom one of us was associated for a considerable time, and to Dr. John Parkinson, with whom both of us have been closely associated in recent years in the cardiac department of the London Hospital.

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As a result of this year's collection the Metropolitan Hospital Sunday Fund has a sum of £51,000 to distribute. The money will be allocated to hospitals, convalescent homes, dispensaries, and nursing associations in the London area. At a meeting of the council of the Fund the report of the Distribution Committee was adopted. The larger allocations include £3,400 to the London Hospital; £2,010 to St. Thomas's; £1,950 to the Royal Free; £1,850 to the Middlesex; £1,800 to University College Hospital; £1,540 to Guy's; £1,400 to St. George's; £1,360 to St. Mary's; £1,200 to Charing Cross; and £1,190 to King's College Hospital.

THE "RESTROPIC" ACTIVITY OF BLOOD

BY

C. WETZLER-LIGETI

AND

B. P. WIESNER, Ph.D., D.Sc.

In previous publications (Wetzler-Ligeti and Wiesner, 1937, 1938a, 1938b) we have described the effects of various pituitary extracts upon the reticulo-endothelial system (RES) of the rabbit. Congo-red solution was injected intravenously and the rate at which the dye disappeared from the circulation was determined; this rate has been taken, in accordance with the view of previous authors (Adler and Reimann, 1925; Moncorps and Günther, 1933; Dieryck, 1929; Stern and Willheim, 1935), as an index of the functional activity of the RES. It was found that certain anterior lobe extracts raised the Congo-red index by a considerable amount. The active substance—termed the positive RES-tropic (restropic) factor—is not identical with either gonadotropic or thyrotropic hormone. In addition to positive restropic extracts, the anterior lobe yields a substance that rapidly, though only temporarily, lowers the index and thus presumably inhibits the function of the RES. This negative restropic factor is closely associated, or identical, with the thyrotropic hormone.

These experiments suggested that the RES was subject to endocrine control. Since other hormones, such as the oestrogenic and gonadotropic substances, can be demonstrated in the circulation, the experiments have been extended to the examination of blood. Some of the results are presented here, in extension of preliminary notes on the subject published elsewhere (Wetzler-Ligeti and Wiesner, 1938c; Czato, Wetzler-Ligeti, and Wiesner, 1938).

Method of Extraction

Fresh blood—obtained from the veins of rabbits or human subjects, or from the heart of the horse—was defibrinated by shaking it with beads. An equal volume of a 20 per cent. aqueous solution of sulphosalicylic acid was added to the defibrinated blood and the mixture was shaken vigorously. The precipitate was collected in a centrifuge and taken up in 50 ml. of 6 per cent. aqueous ammonia. The mixture was allowed to stand for twelve hours at a temperature of 37° C. It was then centrifuged and the precipitate was discarded. The supernatant liquid was adjusted to *p*H 5 by means of acetic acid, and an equal volume of 90 per cent. alcohol was added. The resulting precipitate was discarded. An equal volume of 95 per cent. alcohol was added to the supernatant liquid. The precipitate was made up with distilled water to a volume the same as the initial volume of blood. The precipitate did not wholly dissolve, and the solution was clarified by centrifuging. The whole process was carried to completion within twenty-four hours of collecting the blood sample. The extracts were stored at 4° C., as the activity is lost at room temperature.

The general properties (solubility, stability, etc.) of the active fraction agree with those of the pituitary extracts obtained by similar methods.

Determination of Congo-red Index

Stern and Willheim's modification (1935) of the Congo-red method (Adler and Reimann, 1925) was again used. Virgin rabbits obtained from a commercial breeder were employed in these experiments. Uniformity of stock and age is desirable; for although the Congo-red index tends only to vary slightly in untreated rabbits (± 5 per cent.),

individual differences in the basic level may be pronounced. Thus the index in one untreated rabbit may be about 50, while in another individual it may be 30. Generally the basic index is within the range 30 to 50. A fall produced by experimental procedure will be more manifest if the basic index is high than if it is low; conversely, a rise is more impressive if the basic index is low. Animals uniform with respect to origin, weight, and age must be used in order as far as possible to eliminate these individual differences.

The index was determined in each experimental rabbit. The first injection of the extract to be tested was then administered subcutaneously. During the following days one injection daily was given, a total of three to five daily injections being administered. In most cases the number of injections was four; with a few exceptions (made in the first experiments) 1 ml. was administered on each occasion. The determination of the index was repeated on the day after the first injection and subsequently as shown in the graphs—that is, twenty-four hours after the last injection and again after a further interval (eight to ten days).

Results

1. *Rabbit's Blood.*—The blood of virgin rabbits contains a considerable quantity of positive restropic substance. The response evoked in an immature rabbit by the extract from 10 c.cm. of blood of another rabbit of the same age is shown in Fig. 1. It will be seen that the index rises

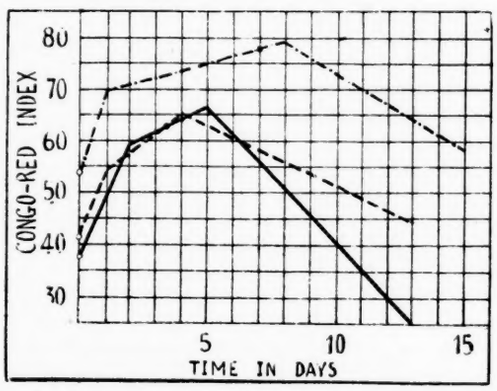

FIG. 1.—Instances of Positive Extracts: ——, Healthy female; - - - -, Bronchopneumonia; —·—, Normal female rabbit. (o = first injection; ● = last injection. Points of inflexion indicate days on which the index was determined.)

rapidly, but tends to return to the original level after the injection is stopped. No general effects were noted.

2. *Horse's Blood.*—The blood of a slaughtered horse (age unknown) contained small quantities of positive restropic substance. The concentration was well below that found in the rabbit. The blood of a pregnant mare (seventy-first day of pregnancy) was also tested. The method of extraction was similar to that used for obtaining positive restropin from the anterior lobe. The resulting blood extract was rich in gonadotropic hormone, but did not affect the Congo-red index.

3. *Human Blood.*—Samples of human blood were collected from forty-five subjects. This number does not include some cases used in experiments in which the technique was varied or in which the clinical diagnosis was doubtful. Of these forty-five cases, eight were healthy; fifteen exhibited various clinical conditions other than malignant disease; in twenty-two cases malignant disease was established. Samples of 5 to 10 ml. each were employed; hence one rabbit only was used in each experiment. In four cases of malignant disease the animals died soon after the first injection, so that no curve can be given.

Three types of response were noted, and may be described separately.

(*a*) *Positive Response.*—Two examples of this type are shown in Fig. 1 (see also table). It will be seen, for instance,

Blood Restropin Table

No.	Clinical Diagnosis	Before First Injection	After One Injection	After Four Injections	Eight Days after Last Injection
1	Healthy	42.5	55.5	54.0	44.0
2	,, ...	48.0	56.0	55.0	46.0
3	,, ...	27.9	42.8	57.1	48.0
4	,, ...	37.0	58.8	67.3	25.0
5	,,*	55.0	†	70.0	36.0
6	Glaucoma	46.8	66.6	56.5	41.7
7	Tb. pulmonis	39.2	59.0	*	42.4
8	Oedema ex alimentat.	50.0	68.7	65.2	46.8
9	Sciatica	40.4	57.2	54.3	46.8
10	Cholelithiasis	38.2	40.0	39.2	
11	Carcinoma vulvae ..	44.0	30.0	20.0	49.0
12	,, cervicis ..	46.0	33.0	28.0	50.0
13	,, mammae..	48.0	30.0	23.0	49.0
14	,, auris ..	54.3	33.0	‡	
15	,, parotidis..	45.4	42.2	44.4	‡

* Convalescing after tibial fracture.
† No determination made on second day.
‡ Animal died.

that the index rose rapidly in a rabbit that had received injections of the extract prepared from the blood of a normal subject. Before treatment 37 per cent. only of the dye was eliminated from the circulation during a period of fifty-six minutes. Twenty-four hours later the rate had risen to 58.8 per cent., and it continued to rise to a maximum of 67.3 per cent. After stopping the injections the index fell again to a level somewhat below the original. The animal bore the injections well. Similar activity was established in other samples of normal blood examined. Further examples are shown in the table. Positive restropic activity is not restricted to the blood of healthy subjects: it was also found in the majority of clinical conditions, excluding cases of malignancy. Examples are shown in Fig. 1 and in the table. The response to positive restropic extracts manifests itself rapidly, and a raised index is usually found twenty-four hours after the first injection. But the effect requires several days for its full development.

(*b*) *Inactive Extracts.*—In eight cases the extracts did not significantly affect the Congo-red index, the variations being within the normal range. Examples are shown in Fig. 3 and in the table. It will be noted that the curve resulting from plotting the successive indices against time is nearly straight and horizontal. No general effects were noted in the animals.

(*c*) *Negative Restropic Extracts.*—In eighteen cases strongly negative effects were observed. The index fell rapidly, in some cases to less than half its initial measure. Examples are shown in Fig. 2 and in the table. Stopping the injections was followed by a return of the index to *about* its initial level. The extracts affected the general condition of the animals. More or less pronounced emaciation resulted; in some instances the animals succumbed in a cachectic condition after one to four injections. Extracts of this type have been obtained from cases of malignant disease only.

The type of extract (positive, negative, and indifferent, respectively) obtained from blood seems to be related to the subject's condition. Positive extracts were procured from eighteen of the twenty-three cases who were either healthy subjects or exhibited some clinical syndrome

other than that of malignant disease. Negative extracts were obtained from nineteen of the twenty-two cases of malignant disease, when the animals survived to yield definite data. Inactive extracts were got from eight cases, including three of malignant disease. These findings may be expressed differently by stating that in most cases of malignant disease negative extracts are obtained, whereas in

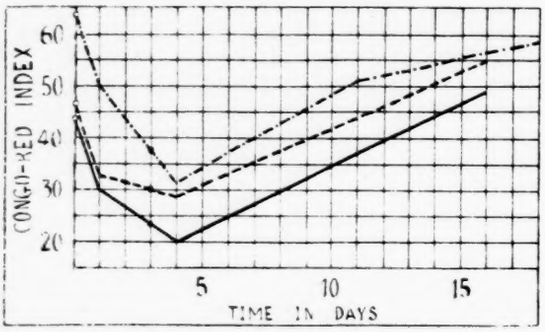

FIG. 2.—Instances of Negative Curves: ——, Carcinoma vulvae; - - -, Carcinoma cervicis; -·-·-, Carcinoma cervicis. (o = first injection; ● = last injection. Points of inflexion indicate days on which the index was determined.)

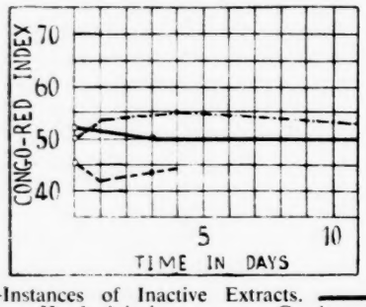

FIG. 3.—Instances of Inactive Extracts. ——, Healthy female; -·-·-, Head injuries; - - - -, Carcinoma parotidis. (o = first injection; ● = last injection. Points of inflexion indicate days on which the index was determined.)

the absence of malignant tumours positive extracts result as a rule. Inactive extracts may be found in either group; but as yet no case of untreated malignant disease has yielded a positive extract, whereas negative extracts were not found in any case in which the clinical diagnosis excluded the presence of a malignant tumour.

Discussion

The rise in the Congo-red index following upon the injection of extracts prepared from "normal" blood, whether human or animal, is pronounced; hence it must be concluded that the blood of healthy subjects contains a positive restropic factor. The origin of this substance is obscure: although we have not yet detected any chemical or biological difference between the positive restropic factors of human blood and of cattle pituitary, the identity of the two substances and the pituitary origin of restropin in blood are by no means proved. Further experiments are required to elucidate this question; in their planning it will be necessary to consider the possibility that the restropin of blood is derived from the centres of the RES.

The data also show that disease in general, with the exception of malignant disease, does not fundamentally alter the restropic activity of blood. As a rule a positive factor is present even in severe non-malignant conditions. There are some indications that the concentration of restropin may even be higher in some diseases than in health, but a much larger amount of material is required to confirm this observation. On the other hand, both in normal subjects and in various clinical conditions the concentration of positive restropin may fall so low that with amounts of extract similar to those used in the present experiments there may be no effect on the RES of the test animal.

It is also clear from the data so far obtained that the normal restropic activity of blood tends to be reversed in malignant disease. Although some interest attaches to this finding, it must be remembered that we have examined up to the present moment but few types of malignant tumours. Hence no general statement can be made as to the kind of malignant disease in which positive activity is lost and negative activity develops; nor is it known at which stage of neoplastic development restropic activity changes.

The origin of negative restropin is even more obscure than that of the positive factor. In experiments with pituitary extracts negative activity was found to be associated with the thyrotropic factors; in the present experiments no obvious thyrotropic activity was noted to attach to the negative extracts. Moreover, these extracts were toxic in many instances—a property not observed in corresponding doses of thyrotropic extracts.

The biological significance of the findings under discussion is open to several purely provisional interpretations. It could be considered that the RES is involved in the maintenance of immunity and resistance: the presence of positive restropin possibly reflects, or conditions, the active state of the system. Conversely, the development of negative restropic activity in the blood might tentatively be regarded as a manifestation of a severe disturbance of the function of the RES. The fact that negative restropic activity has been demonstrated up to the present time only in cases of malignant disease is possibly significant, for it has long been assumed that the systemic changes that develop in malignant disease extend to the RES, and a voluminous literature concerning this relationship has accumulated. Roffo's observations (1929, 1933) are of considerable interest in connexion with our findings. He showed that the blood of cases of malignancy could cause increased weight of the spleen in the mouse. Roffo concluded that in cases of malignancy changes took place in the lipoid metabolism, resulting in secondary structural and functional changes in the RES. Although we have not examined the corresponding effects of their extracts, it should be mentioned that in our experiments the lipoid fraction of blood was almost completely eliminated.

It is, however, hardly possible at the present moment to discuss these questions profitably, or to analyse further the problems that suggest themselves, such as the part played by the pituitary, which has been shown to yield both negative and positive restropic extracts. There is not even evidence to show whether the lack, or reversal, of positive restropic activity is correlated with the actual presence of a malignant tumour or whether it indicates a systemic change that may either precede or follow, condition or be conditioned by, neoplastic development.

Summary

1. The blood of rabbits, of the horse, and of healthy human subjects has been found to contain a factor that stimulates the activity of the reticulo-endothelial system (positive restropic factor).

2. Positive restropic activity seems to persist in disease, except in malignant disease, when, as a rule, the normal activity is reversed, a negative restropic factor being found in the blood.

We are greatly indebted to Dr. P. O. Ellison, pathologist to the Royal Northern Hospital; the staff of the Royal

Cancer Hospital (Free); Dr. J. Patterson, pathologist to Charing Cross Hospital; and Dr. Rouillard, Waterloo Hospital, for samples of blood and for clinical diagnoses.

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TREATMENT OF CARCINOMA IN THE PHARYNX AND LARYNX BY IRRADIATION*

BY

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In this brief survey I would like to emphasize a few points. They are: (1) operation should be done where possible; (2) all patients undergoing irradiation treatment should be treated as in-patients; (3) radium has its particular uses, and so has *x*-ray treatment.

Apart from growths which are better treated by irradiation because of their histology or their position, I will say with all emphasis that where (with due consideration of anatomical and histological limitations) an operation can be adequately performed, that is the treatment of choice. Of course irradiation can be used as an aid to operation, but this I will discuss later. Speaking generally, the results of operation are more satisfactory than those of irradiation alone—partly no doubt because the cases for operation are carefully selected and are not so advanced.

The suitability of a growth for irradiation depends on its histological character and its situation. If the cells are young and undifferentiated and the growth is rapid and large it is better treated by irradiation, because such a growth is radiosensitive, and at the same time the results of operation alone are so unsatisfactory. On the other hand, if an epithelioma is of the more mature type with a good deal of fibrous tissue, or has been treated previously by irradiation or operation so that there is an increase in scar tissue, it has little radiation-sensitivity and is better operated on.

Now let us consider the subject with regard to the position of the carcinoma. We know that carcinomata arising in certain sites only slightly removed from others are especially sensitive to irradiation treatment and the results are good. The tonsil, if the growth has not become adherent to the more solid structures, is particularly suitable for interstitial irradiation. My cases were all rather advanced and all had glands, but, excluding one patient who is alive and well after seven and a half years, the average life is eleven and a half months for all.

Intrinsic carcinoma of the larynx, if it has not spread posteriorly to the arytenoids or anteriorly to the epiglottis, is particularly susceptible to irradiation—so also is epithelioma of the soft palate—and there is no resulting deformity or alteration of voice. Firm fixation of the growth and involvement of muscle and cartilaginous or bony tissues are indications that irradiation alone will not be successful. Here are Coutard's figures for 1937.

Epithelioma of palato-tonsillar region	66 cases	—32%	5-year survival
„ pharynx	226 „	—11%	„ „
„ larynx	126 „	—24%	„ „

In comparing results five years is a useful period to take, but at this point I would like to mention that our President in 1934 had a case of carcinoma of the larynx which had recurred twenty-four years after operation. It was successfully treated by irradiation.

If there are glands present the results of irradiation are not so good. Glands are more resistant than the primary growth: five of my series of eighteen cases of extrinsic carcinoma of the larynx which have lost the primary growth still have glands that can be felt. Unfortunately nearly all the cases we see have glandular enlargement, except, of course, the intrinsic carcinomata.

Though metastases are associated with irradiation treatment, I am aware of no grounds for saying, nor has it been proved, that metastases are *encouraged* by irradiation. The survival period of the patient is increased by irradiation, which also is so often employed as a forlorn hope for extensive and inoperable cases. All it can do in such cases is to heal an ulcer, stop haemorrhage and pain, and otherwise ease local discomfort.

Comparative Results

In comparing results we must also remember that operation cases are of necessity hospitalized, whereas many of those treated by irradiation attend as out-patients and are ill clad, under-fed, have dirty mouths, and have to travel home after each treatment in all weathers. There is no doubt that very much better results would be obtained with irradiation if the patients could be taken into hospital. The statistics of private patients bear out the above facts

Irradiation has its uses in combination with operation. It destroys the young and active cells of the growth and renders an adherent growth more movable. Coutard advises operation before the twenty-fifth day after irradiation—that is, before the reappearance of any new cells and any skin reaction. Hautant also advocates irradiation before operation. Although some believe they have had better results from their operations by using irradiation afterwards, Coutard is not much in favour of it: it is the scar tissue that limits the usefulness of the radiation in these cases.

Methods of Irradiation

With reference to the different modes of irradiation, I limit my treatment to the use of radium needles or radon seeds, and those requiring external irradiation I refer to Mr. Carter Brain or Mr. White Phillips. On the whole I think I get better results with radium needles than I do with radon seeds. The dosage of the latter I feel is initially uncertain, and radium needles give just as big a dose at the end of the week of insertion, when it is wanted most.

Care is required in the spacing of the needles if they are to be completely effective; also, the results are better if there is a previous wide external application of radiation. Interstitial irradiation with needles is more effective than external irradiation in the treatment of the older cell type of growth. Needles are indicated particularly in carcinoma of the tonsil, soft palate, and intrinsic carcinoma of the larynx, using the fenestration method. Harmer has had a 75 per cent. five-year survival result. One of my patients is alive and well after eight years.

* Read in the Section of Oto-Rhino-Laryngology at the Annual Meeting of the British Medical Association, Plymouth, 1938.

Extrinsic carcinoma of the larynx and other growths involving the pharynx are unsuitable for interstitial irradiation. Of eighteen cases that I have had treated by external irradiation all had glands, and in five the growth has disappeared comparatively quickly, but the glands are still palpable after two years. I have had poor success with post-cricoid carcinoma, my few patients all dying within six months.

X-ray and radium beam treatment are outside my province, but it is generally accepted that deep *x* rays are more satisfactory than the beam method, as they can be applied at a greater distance from the skin and for shorter time-doses than with the present small amounts of radium available for beam treatment. It must be remembered that irradiation renders a growth more resistant to its rays on a second occasion, and at the same time the normal tissues are also more sensitive; therefore a full carcinomacidal dose should be given at the first treatment.

As I have said, *x* rays are the best treatment for rapidly growing carcinomata, and they are the only treatment for extensive growths and serious gland involvements. Coutard gets good results with external irradiation of intrinsic carcinoma of the larynx, but I think the fenestration method is superior. The technique of treatment by irradiation is always being improved, with better results, and I expect still better results with an improvement in the facilities and in the condition of the patients.

HELIUM IN ANAESTHESIA

BY

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Helium, like nitrogen, is a physiologically inert gas. But it is very much lighter. An artificial atmosphere of normal oxygen content (21 per cent.), but with 79 per cent. of helium replacing the normal nitrogen, is only one-third as heavy as ordinary air. It should require only one-third the amount of force to move it (force = mass × acceleration) and it should pass through narrow apertures twice as easily (the rate of diffusion of gases is inversely proportional to the square root of their densities).

Helium–oxygen mixtures have been suggested for deep-sea divers and caisson workers because of their rapid diffusibility (and low coefficient of solubility), which allows of quicker passage from the blood to the alveoli and consequently quicker decompression. Sayers and Yant (1926) found that small animals subjected to pressures of 10 atmospheres for one to five hours could be decompressed from helium–oxygen in one-third to one-quarter the time required for nitrogen–oxygen.

Lemmer and Rovenstine (1935) proposed putting this low solubility to practical use in anaesthesia. Their experiments on different gases (with the object of preventing post-operative atelectasis) showed that its actual absorption from the alveoli into the blood was the slowest of nine different gases tested. But it has another potential use in anaesthesia—its facility in passing through narrow apertures. Barach and Eckman (1935) proved experimentally that 25 to 50 per cent. less pressure was required to move helium–oxygen mixtures. Eversole (1937), using the mixture clinically in seventy-two patients with respiratory obstruction, claimed nearly 90 per cent. of successful results. It has also been used in the treatment of bronchial asthma and in respiratory paralysis due to spinal anaesthesia.

The British Oxygen Company very generously presented one of us (W. S. S.) with a ten-cubic-foot cylinder of helium, which until recently was unobtainable except in the United States. The company can now supply it. This was tried in half a dozen cases during cyclopropane anaesthesia, but as the patients had no respiratory obstruction and were already breathing with the remarkable calmness and quiet typical of cyclopropane it had no apparent effect.

Personal Experiments

As no patients with respiratory difficulties were available personal experiments were carried out with artificial obstructions.

A Foregger-Waters soda-lime canister and rebreathing bag were used. The face-piece was replaced by an intratracheal adapter, to which was fitted a rubber mouth-piece which carried a screw clamp. This clamp was tightened until considerable constriction was caused. Actually a Magill tube of 5 mm. internal diameter was compressed until the lumen was about ½ mm. wide and 8 mm. long. The subject then breathed in and out of the bag through the soda lime and through the constriction. A quarter of a litre of oxygen per minute was allowed to enter the bag through a flowmeter, while the expired carbon dioxide was of course removed by the soda lime.

In one series of experiments air only was used, in the other a helium–oxygen mixture of approximately similar percentage. In every case the subject breathed through the constriction until dyspnoea became intolerable. The times were taken by stop-watch.

In each experiment with helium the bag was emptied and refilled after the first half-dozen breaths in order to get rid of some of the residual nitrogen from the lungs. By refilling the bag several times it might be possible to improve upon our figures.

As we were using ourselves as subjects we disregarded Home Office regulations about killing the experimental animals at the close of the session. This led us into a trap which invalidated our first series of results. We tried to obtain many readings in one evening, and very soon found that the fatigue caused by semi-strangulation produced increasingly rapid intolerance to a repetition of the process.

The times given below were all taken after allowing a sufficient interval for complete recovery. The constriction caused by the screw clamp remained constant throughout.

Times Taken in Breathing to Exhaustion Point.

No. 1 subject, W. S. S. Aged 43, heavy smoker.

Nitrogen–oxygen (Ordinary Air, Regenerated)	Helium–oxygen, Regenerated
3 min. 15 sec.	6 min. 43 sec.
4 min. 13 sec.	7 min. 34 sec.
4 min. 47 sec.	7 min. 35 sec.
3 min. 50 sec.	8 min. 10 sec.
3 min. 59 sec.	7 min. 35 sec.
4 min. 30 sec.	7 min. 26 sec.
Average 4 min. 5 sec.	Average 7 min. 30 sec.

No. 2 subject, R. C. L. Aged 27, non-smoker.

Nitrogen–oxygen		Helium–oxygen
5 min. 23 sec.	.....	9 min. 30 sec.
4 min. 40 sec.	.....	9 min. 10 sec.
4 min. 10 sec.	.....	10 min. 21 sec.
4 min. 36 sec.	.....	8 min. 54 sec.
3 min. 58 sec.	.....	8 min. 20 sec.
Average 4 min. 33 sec.	.....	Average 9 min. 15 sec.

Probably the slightly better times obtained by subject No. 2 are accounted for by difference in age and smoking habits. His fifth experiment, which was easily his worst, was done shortly after exercise. The results are on the whole very consistent.

Conclusion

An artificial atmosphere of helium and oxygen is theoretically and practically about twice as easy to breathe as ordinary air, and the mixture should be of great value in cases of respiratory obstruction or in cases in which it is essential to economize muscular effort. When obstruction is present its value is immediately apparent and can be measured by simple timing experiments. Even if there is no obstruction, in which case it has no visible effect, it might still be of value in reducing the amount of work done by the patient and in preventing post-operative collapse of the lung because of its low solubility.

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CARDIAZOL THERAPY IN STUPOR

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The treatment of schizophrenia by cardiazol has been practised on the Continent to an increasing extent in recent years, and the view is current that a favourable response is often met with in cases of stupor. In the present series eighteen cases of stupor were treated, and in their selection no special criteria were employed. Each case, however, was carefully examined to exclude organic disease. The stupor, although it varied in depth, was the outstanding clinical feature in each case.

Technique of Injection

The technique employed was that recommended by Meduna. A 10 per cent. solution of cardiazol buffered to *p*H 8 with 0.1 per cent. disodium hydrogen phosphate to prevent decomposition on sterilization was injected intravenously, beginning with 0.5 gramme in the case of men and as a rule 0.4 gramme in the case of women. Three injections were given weekly, and the dose was increased by 0.1 gramme whenever it was found that a larger amount was required to produce a convulsion. It was never necessary to employ a higher dosage than 1 gramme. It was decided to produce in each case thirty convulsions unless some complication supervened. It is well known that thrombosis is one of the difficulties to be contended with, and therefore if only one or two veins be available (and this is not uncommon in women) treatment may have to be abandoned at an early stage. With a view to preventing this occurrence the solution of cardiazol employed was buffered, and in addition all traces of the drug were removed from the needle by rinsing in normal saline before insertion into the vein. Further, after the injection had been given any extravasation of blood into the tissues was prevented by firm pressure by means of a swab at the site of puncture, and this was maintained throughout the convulsion. As soon as the latter was over, a dry dressing was firmly applied. No attempt was made to thread the needle up the vein, as this appeared likely to increase the possibility of thrombosis.

Results

The total number of patients treated was eighteen, of whom eleven were males and seven females. In eleven cases thirty convulsions were produced, and this was held to constitute a full course of treatment. In the remaining seven cases, for one reason or another (see below) it was found necessary to discontinue treatment after the production of from three to nineteen convulsions. In the table below are set out particulars of the cases. It will be noted that Cases 1 to 11 received the full course of treatment, while in Cases 12 to 18 treatment was incomplete for the reasons assigned.

Table giving Particulars of Eighteen Cases of Stupor Treated by Cardiazol.

Case	Sex	Age	Duration of Illness	Duration of Stupor	Type of Stupor	Dose in grammes	No. of Convulsions	Result	Remarks
			Years	Years					
1	M.	40	3	1 3/12	Non-resistive	0.5-0.7	30	Complete remission	
2	M.	28	1 3/12	1	Resistive	0.5-1	30	,,	
3	F.	23	1 3/12	9/12	,,	0.4-0.7	30	,,	
4	M.	23	4/12	3/12	Non-resistive	0.5-0.8	30	Partial remission	
5	F.	23	5	6/12	Resistive	0.4-1	30	,,	
6	F.	22	6	2 3/12	,,	0.3-0.8	30	,,	
7	F.	47	10	10	Non-resistive	0.3-0.8	30	,,	
8	M.	44	4	3/12	,,	0.5-0.8	30	No change	
9	M.	28	5	3	,,	0.5-1	30	,,	
10	M.	30	3	3	,,	0.5-1	30	,,	
11	M.	32	7	2	Resistive	0.4-0.7	30	,,	
12	M.	36	1 6/12	1 3/12	,,	0.5-1	19	Partial remission	Marked hostility
13	F.	47	13	4	,,	0.5-0.7	7	,,	Treatment being continued
14	F.	31	3 4/12	3	,,	0.5-0.6	4	,,	Thrombosis of veins
15	M.	28	2	2	Non-resistive	0.5-0.7	9	No change	Activation of pulmonary tuberculosis
16	M.	27	3 6/12	3	,,	0.5-0.8	8	,,	Thrombosis of veins
17	F.	30	3	4/12	Resistive	0.4-0.6	4	,,	,,
18	M.	35	10/12	10/12	Non-resistive	0.5-0.6	3	,,	Numerous after-convulsions

Reference to the table will show that of the eleven cases which received a full course of treatment three made a complete recovery, four showed some improvement, and the remaining four did not benefit. As is to be

expected, and as others have stated, there is a definite correlation between the duration of the mental disorder and response to treatment, those cases with the shorter duration improving to a greater extent than those in which symptoms have been present for a longer time. In the three cases which recovered the average duration of illness was under two years; in those in which only a partial remission or a complete failure to respond was obtained the average duration of symptoms was over five years.

It is noteworthy that, of the cases which recovered, Case 1 was considered to be one of depressive stupor, whereas Cases 2 and 3 were undoubtedly examples of schizophrenic stupor. In all three the stupor was profound, and in Cases 2 and 3 it came on abruptly. It seems that it is in these cases, where a deep stupor has appeared suddenly and has not been preceded by a phase involving schizophrenic deterioration, that the best results may be anticipated. The fact that in Case 1 there was a relatively long duration of illness before the onset of stupor does not contradict this suggestion, since in that instance the illness was considered to be essentially depressive in type and therefore no deterioration was to be expected.

In order to discover whether such deterioration is present in any given case of stupor before treatment is begun, a colleague, Dr. W. P. Berrington, has suggested the employment of sodium amytal. This drug in many cases causes the patient to emerge from his stupor for a short time, during which it is possible by questioning and observation to detect the presence of any deterioration. It is also possible that sodium amytal may be useful in another way, since it seems likely that unless it produces the above effect treatment with cardiazol will not lead to good results.

In those cases where stupor was deepest a few injections only were necessary to produce dramatic results, particularly in relation to mutism and refusal of food. As an example of this Cases 13 and 14 can be quoted. In the former the patient had been stuporous for four years and mute and refusing food for two years. Three injections were enough to make the patient sit up, converse, and feed herself. In Case 14 the patient had been stuporous, mute, and refusing food for three years. Again three injections led to the patient sitting up, speaking, and feeding herself.

Complications Observed

1. THROMBOSIS

In spite of the precautions (see above under heading of technique) which were taken thrombosis of the veins did occur in a number of cases, and in three of these to such an extent that it was impossible to continue treatment. In these cases the number of injections given was very small—namely, four, four, and eight respectively. It is noteworthy, however, that in some of them it was possible to give as many as fifteen injections into the same vein without any apparent thrombosis occurring, and this would appear to suggest that a personal factor is involved. Occasionally, after thrombosis had occurred in a vein, if an interval were allowed to elapse it was found that the vein could again be used successfully.

2. DISLOCATIONS

(*a*) *Forward Dislocation of the Jaw.*—This occurred in two patients, and took place at the beginning of the fit when the muscles of the jaw, along with others, were in tonic spasm. The reduction of the deformity was easily carried out immediately after the fit had ceased, during the stage of relaxation. It was found possible to avoid a recurrence of the dislocation in subsequent seizures by instructing the nurse to prevent the lower jaw opening too wide by pressing upwards with one hand placed under the chin while exerting counter-pressure with the other on the vertex. This pressure may be discontinued as soon as the tonic spasm is over, and the gag or tampon is then quickly placed between the teeth.

(*b*) *Subcoracoid Dislocation of the Shoulder.*—This happened twice during the tonic stage of the fit in a patient who gave no history of any previous dislocation at this joint. Reduction presented no difficulty.

3. ATYPICAL FITS

(*a*) *Delayed Fits.*—In the majority of cases the convulsion occurs about fifteen seconds after the injection of cardiazol into the vein. In a few cases it is found that this interval is constantly exceeded, and a period as long as two or three minutes may elapse. So far as could be ascertained, in those cases all the cardiazol went into the vein. In one case it was known that the greater part of the cardiazol went into the surrounding tissues, and in this instance a seizure occurred, but not until fifteen to twenty minutes had elapsed. The longer interval is presumably accounted for by the slower absorption, which prevented the cardiazol from quickly reaching the concentration in the blood necessary for the production of the seizure.

(*b*) *Weak Seizure followed by a Strong.*—In one case on almost every occasion the injection of cardiazol was followed by a slight fit, and then, after an interval of up to a minute, the major convulsion occurred.

(*c*) *Strong Seizure followed by a Weak.*—In two cases immediately after the patient had had a strong seizure and was in a state of relaxation a second much weaker fit followed.

(*d*) *After-convulsions:*

(i) Convulsive Twitchings.—In one case where the veins were partially thrombosed an injection of 0.7 gramme into an arm was followed by a ballooning of the vein, and as no fit occurred a similar injection was given into the other arm, with the same result. Finally, a patent vein was chosen, and when another 0.7 gramme was injected a strong fit occurred; but throughout the next twenty-four hours this patient continued to have generalized convulsive twitchings accompanied by periodic vomiting. The cardiazol which was injected into the first two partially thrombosed veins was possibly absorbed so slowly that the concentration in the blood failed to reach that necessary to produce a major convulsion, but was sufficient to give rise to generalized twitchings.

(ii) Numerous Severe Seizures.—Case 18 (see table) is of great interest. Following the first injection of 0.5 gramme of cardiazol a strong seizure occurred and was followed after an interval of three minutes by another not quite so strong. Three days later a second injection of the same amount produced no reaction. On the third occasion 0.5 gramme again produced no reaction, so the dose was immediately repeated, with the result that a strong seizure occurred, followed almost at once by three more strong seizures. Later in the day the temperature rose to 101° and the patient appeared ill. On the next occasion, since 0.5 gramme had previously failed to produce a fit, 0.6 gramme was given without result. As before, this was immediately repeated, and was followed by the occurrence of seven fits at intervals during the next twenty-four hours. It was decided, in view of this, to discontinue further treatment.

4. ACTIVATION OF PULMONARY TUBERCULOSIS

Case 15, in which there were no clinical symptoms or signs of a pulmonary lesion before treatment was begun, showed after the ninth injection an evening rise of temperature, with clinical evidence of a right apical lesion, which has subsequently progressed rapidly. It is possible in this case that had a skiagram of the chest been taken before treatment the presence of a quiescent focus would have been discovered, contra-indicating treatment. Such an occurrence suggests the advisability of screening the chest in every case before treatment is undertaken.

The results of treatment described above must not be considered to be final, as relapse may yet occur in some of the cases. Indeed, in one (Case 5) which had received a full course of injections and had had thirty convulsions resulting in a partial remission there are already signs of relapse, and this in spite of a further short course of injections.

Conclusions

From the results it would appear advisable to treat every case of stupor, whether of long or short duration, with cardiazol. Complete recovery or improvement may be expected in those cases in which the illness has lasted a relatively short time and in which the stupor has been almost the earliest symptom. Even when underlying deterioration is masked by stupor the latter will disappear with cardiazol therapy, but the former will become evident. Apart altogether from the question of remission, refusal of food and consequent tube-feeding in cases of stupor should be almost completely eliminated by cardiazol therapy.

We would like to thank Dr. N. Roberts, medical superintendent of West Park Hospital, for permission to publish the details of the cases.

Clinical Memoranda

Suicide after Treatment as Voluntary Patients

During the last fifteen months four women between the ages of 30 and 38, who had been married for from eleven to eighteen years, have entered this hospital as voluntary patients, left in a month, and committed suicide within a few days of leaving—three by coal gas and one by drowning. Their cases bear such strong resemblances to each other as to necessitate being recorded as a group.

DESCRIPTION OF CASES

In three cases there was no suspicion of mental illness in the family; in the other the mother and one brother (out of five siblings) had each been in a mental hospital for a period. There was nothing of interest in their early histories except a tendency to obsessional traits. All had carried out the duties of a housewife with conscientiousness for many years. They were all non-smokers, and only one took a little stout occasionally as a tonic. They were or had been regular church-goers, and all had strong religious feelings. One had no children, two had one each, and the other had four.

In two cases the illness was the first attack. Of the others one had had mild symptoms six years before, and one had experienced, during the last fifteen years, six attacks of apathy and depression lasting a few weeks. Menstruation in each case lasted five to six days, and was regular and rather full. Their symptoms were generally worse during these periods. Their sexual appetites had been stronger than those of most women, but in three cases certainly there had developed either a marked apathy towards or a strong distaste for the husband, who had proved too dull or unimaginative or uninterested to hold their affections. Along with this the children of the marriage became a great trial.

When the patients were first seen at an out-patient clinic the acute symptoms had in each case remained unchanged for at least two months, but the total period of development of the illness had generally been much longer. All the four failed to respond to weekly out-patient psychotherapy, and were admitted to mental hospital as voluntary patients.

They appeared quiet and depressed, with a tremendous apathy which so impaired their energy, concentration, and initiative that their household duties had become intolerable. But on examination they quickly became emotional, and spoke freely of their difficulties and of the utter hopelessness of their future. The general intellectual level was good and the ordinary faculties well preserved. Insight was complete, and they were entirely without delusions or hallucinations. There was no retardation. They were friendly, helpful, and co-operative, and could laugh and be amused. Insomnia was prominent. Self-pity was exaggerated, and two of them said they had toyed with the idea of suicide, but this was not considered to be a great danger at that time.

Three of them complained of chronic bronchitis. Signs of autonomic instability (flush, pallor, coldness and numbness of extremities, dilated or variable pupils, sweating, frequency, and urgency without apparent physical cause) were rather more noticeable than usual, and the tendon reflexes were exaggerated. But otherwise physical examination and laboratory investigation revealed no abnormalities.

One patient was treated by prolonged narcosis, the others by rest in bed, mild sedatives, and simple encouragement and interest. They all appeared to improve a little, but they were anxious to leave, and discharged themselves. Within a few days of leaving (in two cases within twenty-four hours) they had committed suicide.

We regard these patients as women of the obsessional type, with very rigid ideas of right and wrong. It seems that dissatisfaction was followed by antipathy towards the husband, complicated in one instance by a violent attraction to another man. Inflexible moral standards, learnt in childhood, retained their full force, and the patients were unable to deal with the conflict aroused.

DISCUSSION

This group of cases is described as a contribution to the study of the prognosis in depressive states. The difficulties of treatment in such cases and the danger of failure are apparent; but there is a further complication of the problem.

Such cases represent only one group of many different kinds of non-certifiable mental illness which are coming in increasing numbers to psychiatric out-patient clinics. The last resort in treatment for them can only be the mental hospitals, where the facilities are often grossly inadequate; overcrowding is almost the rule, and proper segregation of patients is sometimes impossible. If this is a serious difficulty in the treatment of psychoses, it may be tragic when the voluntary decision to seek help in a mental hospital is made with such mental stress and effort as can only be compensated for by complete cure, and is accompanied by apprehension which proves to be justified.

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Reviews

VIRUS AND VIRUS DISEASES

Virus und Viruskrankheiten bei Menschen, Tieren und Pflanzen. By Dr. Med. Gustav Seiffert. Wissenschaftliche Forschungsberichte Naturwissenschaftliche Reihe. Volume 46. (Pp. 221; 7 figures. RM. 16; bound, RM. 17.) Dresden and Leipzig: Theodor Steinkopff. 1938.

To the growing number of books devoted entirely to the subject of viruses has now been added yet another, *Virus und Viruskrankheiten*, by Dr. Gustav Seiffert. This book is divided into three main parts: general, special, and technical. The general section opens with a brief historical introduction and a definition of the term "virus" in its modern usage, and following this the author considers the various characteristics of viruses, such as size, filterability, morphology, chemical composition, and cultural requirements. The bearing of this knowledge on the nature of viruses is discussed. The last three chapters of this general part of the book are concerned with the question of immunity to virus infections and the epidemiology and specific prophylaxis of virus diseases.

In the second or special part of the book, which is the largest of the three, the different viruses are described in detail, and although the author envisages here all viruses, including those causing disease in plants and insects, it is only the animal viruses which receive adequate treatment. Included in this section are diseases of doubtful virus aetiology, such as acute rheumatism and post-vaccinal encephalitis, and diseases like whooping-cough and scarlet fever, which a few still consider to have a virus as their prime cause. Perhaps it would have been better had a subsection been made for these doubtful viruses. Throughout, however, this section is accurate and up to date and the presentation adequately critical where necessary. Following the special section are two short ones devoted to the virus-like micro-organisms (bovine pleuro-pneumonia and agalactia, rickettsia, bartonella, and grahamella) and the filterable forms of bacteria. The author expresses doubt as to the existence of the latter, and a conviction, with which practically all virus workers will agree, that viruses are certainly not filterable forms of bacteria.

The technical section with which this book closes is a short one. It contains much useful information, but under staining methods one would have liked to see Castaneda's method included, and the three lines on complement fixation are surely inadequate. Though, of course, it is true that this reaction as applied to viruses is, in principle, the same as in the case of bacteria, the beginner would find himself somewhat at sea if he were not told of the necessity for an adequate concentration of the antigen and the advantage of prolonged fixation.

DISEASES OF INFANCY

Säuglingskrankheiten. By Professor Dr. H. Finkelstein. Fourth, thoroughly revised, edition. (Pp. 899; 204 figures, including some in colour. No price given.) Amsterdam: Elsevier, N.V. 1938.

The fourth edition of Professor H. Finkelstein's well-known work on diseases of infants has been completely revised and now appears under the auspices of a publishing firm in Amsterdam. Some fourteen years have passed since the third edition, and in his revision not only has Professor Finkelstein introduced comments upon the advances achieved during that period but he sums up as it were for the last time his long experience in paediatrics, especially as the subject concerns the period immediately after birth and the first year of life. It is a tribute to his great reputation that his name appears upon the title page without any indication of any of his appointments, although the preface is labelled as from Berlin, where the last years of his active professional life were spent. The present edition is beautifully produced with numerous illustrations, many in colour, and there is an excellent index.

To the English reader the criticism must occur that in the many references to the literature there is only scant notice given to those advances made in the English-speaking countries. Dr. Helen Mackay's work on anaemia is quoted and a certain amount of American literature is mentioned, but otherwise the conclusion must be reached that either our country has contributed nothing of importance in the last ten years or so to the study of the newborn or that what has been written is not considered of importance. The work of the Edinburgh school, for example, in regard to various disorders of the newborn would appear worthy of mention, such as has been reported by Craig in the *Archives of Disease in Childhood* during the past few years, and the use of hypertonic rectal saline for the cerebral conditions of the newborn baby is another advance which has been widely accepted in this country and America but not apparently in Germany. However, Professor Finkelstein has set out his own most valuable views, and all interested in the early months of life must be grateful for this present record of his great work and that of his many distinguished pupils on this subject.

INJURIES TO ATHLETES

Athletic Injuries: Prevention, Diagnosis and Treatment. By Augustus Thorndike, jun., M.D. (Pp. 208; 104 figures. 14s. net.) London: Henry Kimpton. 1938.

The author is a surgeon in the Department of Hygiene of Harvard University and therefore comes into intimate contact with injuries sustained by freshmen and sophomores in their various sports, particularly American football. He gives an interesting quotation from the *Handbook of Harvard Athletics*, 1852–1922, which shows what an exaggerated position football had secured for itself in the University life. It is worth quoting in full:

"On the score of physical preparation the methods were equally absurd. It was no uncommon thing for players to report at two o'clock in the afternoon and continue to play until it was actually dark. Practice in those days consisted of hard scrimmage with hardly a minute for breathing space from beginning to end. This was the routine from Monday to Friday, unless there was a mid-week game to break the monotony. There was also a spring and summer practice in addition to the entire fall preliminary season . . . and only the severely injured were excused from daily work. It is no wonder that men were burnt out physically and mentally long before the season closed."

Dr. Thorndike gives a detailed picture of the development of the "medical room" in connexion with games in the university. In 1927 a dietitian "was put in absolute charge of all training tables in Cambridge and in New London." She appears to have been so effective that

"at the end of the year it was noted that there had not been a single case of gastro-intestinal upset during the football season, while in previous years there had been as many as thirty-eight men at a time unable to participate in athletics because of this condition. Among other interesting points discovered by the dietetian was that a man taking part in

football or crew required almost twice the number of calories daily that he did while taking part in baseball, track, or hockey."

Dr. Thorndike has so cut down his chapter on the physiological basis of physical fitness that it is often difficult to follow his argument. His interesting chart on page 31 of physical fitness as measured by lactic acid increase and carbonic acid capacity decrease requires fuller elucidation to make it really convincing. His chapters on physical training and physical fatigue deal simply with the more important basic principles, such as diet, sleep, graduated muscular effort, and absence of drugs. These chapters have many references to work carried out on the physiology of exercise and fatigue. One particularly good feature of these references, eighty-eight in all, is that they are not confined to American authors but cover Scandinavian and English authors, especially A. V. Hill's pioneer contributions to the subject.

The author states specifically that special exercises devised by Raycroft and Croker increase the strength of joint ligaments if done before strenuous games; but he leaves the whole of this important matter without convincing proof as to why he supports their work. The diagrams of joint injuries and the tearing of ligaments, as well as the tables that accompany them, suggest that the author is able to diagnose by digital examination exactly which ligament is injured and the extent of damage—a big claim. The book has a number of statistical tables of his experience since 1932 in relation to various injuries, and though these are interesting as the experience at one university they have little value for practitioners in England, who really want to know the methods of diagnosis and treatment and the disability period of the injuries encountered in America, not the mere numbers.

Part III has been composed "primarily for use as a book of reference." It is "not designed to be read through consecutively." In this section the illustrations of strapping are clear and good, and it is obvious that the author puts great reliance on this as a means of early return to the sport which has occasioned the injury. The short chapter on physiotherapy in injuries does not enter into any detail, recommending only Grayer and Ostrom's textbooks. Massage, "preferably by a graduate of some recognized school of massage, and of sufficient experience so that he will not aggravate and traumatize acute and recent injuries," is recommended. As a book of personal experience, with interesting statistical tables and a careful bibliography, this is a contribution to the subject of athletic injuries.

ENCYCLOPAEDIA BRITANNICA YEARBOOK

Encyclopaedia Britannica Book of the Year 1938. Edited by M. D. Law. (Pp. 742. 45s.) Encyclopaedia Britannica Co. Ltd. London.

It was an ambitious undertaking of the publishers of the *Encyclopaedia Britannica* to produce a book of the year, which is described as "a survey of the principal persons, events, and developments in various spheres of knowledge and affairs during the year 1937." Including the index to the volume, there are 742 pages, and this, presumably, is a measure of the rate at which developments occur in these expansive modern times. But if a book of such formidable dimensions is to be produced each year, then the systematic purchaser will have to look to his shelf-room. It would seem as though the editor has tried to combine an account of what happened in 1937 and of the events that have taken place since the last edition of the *Encyclopaedia Britannica*. She has combined a yearbook with a supplementary volume. As there was a gap in time to be filled it might perhaps have been better to produce a supplementary volume and so to entitle it.

The reader who buys the "yearbook" as a supplementary volume will be well rewarded, for all the features that have gone to make the *Encyclopaedia Britannica* a household word in the world of learning are here happily preserved. Accuracy, thoroughness, scholarship are combined with modernity, and the editor has been nobly supported by the usual first-class team of contributors. Medicine is well served, and we are pleased to notice names familiar to readers of this *Journal:* Sir Henry Brackenbury on hospitals; Sir Robert Johnstone on gynaecology and obstetrics; Professor R. M. F. Picken on epidemiology and infectious diseases; Dr. C. W. Buckley on rheumatism; Dr. J. Blomfield on anaesthetics; Professor L. P. Garrod on immunization; Sir Robert McCarrison on nutrition and vitamins—to mention a few. There are a number of American contributors to the volume, and in places the editor has evidently had difficulty in co-ordinating the material supplied to her from the U.S.A. with what was ready to hand. "Britannica" has undergone an extension of meaning, but not necessarily without profit, though with some lack of cohesion between its geographical elements. At the beginning of the volume there is a diary of events, the first of which (January 1, 1937) is headed "Spanish Civil War," and the last of which (December 31, 1937) refers to Sir Robert Vansittart's appointment to the post that was newly created for him.

IRIS PATTERN AND ITS GROUPINGS

Structural Variations of the Human Iris and their Heredity. With Special Reference to the Frontal Boundary Layer. By Viggo Eskelund, M.D. (Pp. 244; 16 figures; 28 plates; 9 tables. 21s. net.) Copenhagen: Arnold Busch; London: H. K. Lewis and Co. 1938.

Here we have an account of a very thorough investigation carried out at the University of Copenhagen under the auspices of the P. Carl Petersen Foundation; it is published in English with a summary in four languages. Dr. Eskelund's material for study was microphotographs of the living iris in 154 persons; his purpose was to frame a method of classification of iris pattern in man, and to work out the inheritance of the several types, mainly with a view to assessing their value as evidence of paternity. His thesis is that certain distinctive features can be recognized in the iris of every human eye—number of contraction furrows, amount of atrophy of anterior layer, position of lesser circle, amount and distribution of mesodermal pigment—and from them a formula constructed which will give at a glance the type of iris. His terminology makes it rather difficult for English readers to follow the exposition and argument, and the use of a higher magnification when examining the eye might have helped to clarify the description.

Painstaking as Dr. Eskelund's work has been in this limited field, the impression remains that detailed study of a much larger number of individuals, including people of many different races, should be undertaken before it is safe to generalize on the heredity of iris pattern. While no two persons show an identical pattern, a broad classification into types is possible—as in the case of finger-prints. How far such characters are genetically valid remains to be shown, but Dr. Eskelund has laid the foundation for a classification of iris pattern based on minute structural differences, and this should prove more precise than the older groupings that depend on colour and macroscopic appearance.

SIMPLE INSTRUCTION ON SEX

Sex in Everyday Life. By Edward F. Griffith, M.R.C.S., L.R.C.P. With an Introduction by Sir Walter Langdon-Brown and a Foreword by the Rev. A. Herbert Gray, D.D. (Pp. 379. 10s. 6d. net.) London: George Allen and Unwin. 1938.

Nowadays there is an insistent demand for improvement in sex instruction both for the adolescent and for those about to marry, and many books have been written advocating various methods of imparting this. Dr. Griffith has written one more of these books and it is better than most. The first part of the book is concerned with the anatomy and physiology of sex and the general subject of family limitation. A historical survey of methods in vogue through the ages is followed by chapters on modern views on scientific contraception and the medical indications for the prevention of pregnancy. The second part is concerned with the question of happy marriage and the relationship of good physical adjustment with the spiritual and emotional satisfaction of the individuals concerned. The very real difficulties are frankly faced and solutions suggested, and the objects and methods of sex education at the various age periods are dealt with. The third part consists of a series of appendices elaborating with statistical and other information various points raised in the main part of the book.

The subject is clearly dealt with in non-technical language and in a sober and unemotional strain, and this book should be of great value to the physician, the teacher, and parent, and to the intelligent youngster himself. It is an eloquent plea for the use of properly controlled and planned contraception on the grounds of eugenics, morality, and the greater happiness of the community.

Notes on Books

The book of Andreas Laurentius on the *Preservation of the Sight, of Melancholike Diseases, of Rheumes and of Old Age* has rather fallen into the background of late years, for he is now thought of more as an anatomist than as an oculist. Mr. SANFORD V. LARKEY, therefore, has done him a service by issuing in facsimile the English translation published in 1599 by Richard Surphlet, who was himself a coucher of cataracts. The book was well known to Richard Burton, who quotes him some sixty times in the *Anatomy of Melancholy*, printed twenty years later. Mr. Larkey writes an interesting introduction telling all that is known about André du Laurens and Surphlet, and explaining why rheums and old age were dealt with in addition to eye troubles. The book is issued as No. 15 of the Shakespeare Association facsimiles, and published by Humphrey Milford at 21s.

Lord HORDER'S admirable essays entitled *Health and a Day*, which we reviewed on September 18, 1937 (p. 590), have now been reprinted as the second volume in the Aldine Library (J. M. Dent and Sons, 4s. 6d.). The substance of the book is unchanged; not, as Lord Horder points out in an introduction, because he has said the last word on any of the subjects, but because the essays express a philosophy which has guided his judgment over a long period.

The Medico-Legal Society of Victoria has issued a volume of its *Proceedings* during the years 1933–6. This is the second volume published since the society was founded in 1931, and has been edited by Mr. JOHN V. BARRY, barrister-at-law, and Dr. A. E. COATES. The addresses contained in it show the variety of subjects which members have discussed and the thoroughness with which they have been studied. Among a first-class collection of essays there stand out that on science and judicial proceedings, by the Hon. Owen Dixon, a Justice of the High Court of Australia; the lawyer in science, by Professor W. H. Osborne; and some aspects of magic, witchcraft, and sorcery, by Mr. Barry. The *Proceedings* are a fine contribution to the study of medico-legal science. The society intends for the future to publish a volume every two years, and the next will contain addresses given during 1937 and 1938, with discussions.

Preparations and Appliances

COMBINED BLOOD TRANSFUSION SYRINGES AND NEEDLES

Dr. H. C. LUCEY, Pathologist to the Metropolitan Hospital, London, E., writes:

As an alternative to French's or other wide-bore needle, which, attached direct to rubber tubing, is used for withdrawing blood from a donor, the combined blood donor's syringe and needle (Fig. 1) offers certain advantages.

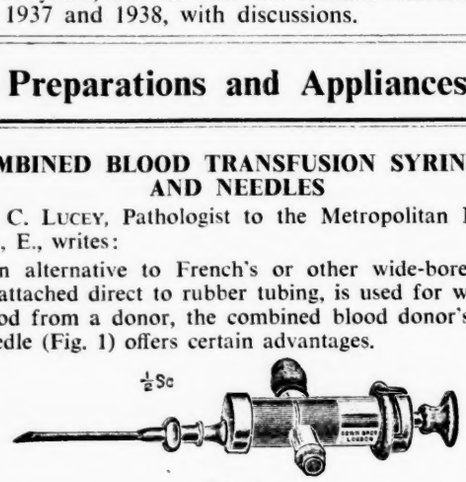

FIG. 1.

This small glass syringe has a metal eccentric nozzle with a hypodermic cone. The bore of the nozzle is the same as the terminal opening of French's needle, 1.8 mm. in diameter. There is no bend of the lumen at its junction with the barrel of the syringe, so that a wire for cleaning can be passed straight through it. The 14 standard wire gauge stainless steel needle, to fit, has the same size bore as the nozzle of the syringe and a tube length of 1¼ inches. Projecting from the barrel of the syringe are two side branches. According to which arm of the donor is selected for venepuncture, so one or other side branch is used. To this is fixed a length of rubber tubing for conveying the blood to a flask containing citrate solution. The side branch directed away from the donor's body is obviously the one chosen; the other is closed with a sterile rubber cap. The metal piston can be withdrawn only far enough to open the side branch for the free flow of blood. By this means 800 c.cm. of blood can be taken without fear of clotting, provided a satisfactory rate of flow is maintained.

For transfusing citrated blood to the recipient a useful syringe to interpose between needle and tubing is shown in Fig. 2. Originally designed for saline transfusion, it should,

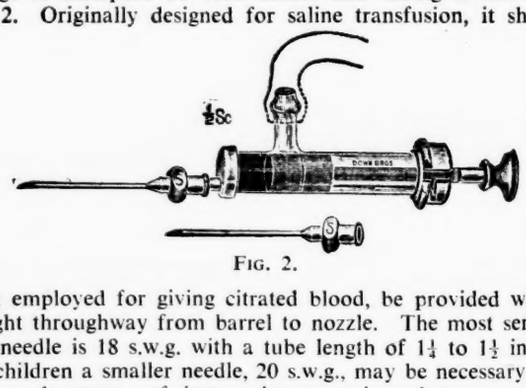

FIG. 2.

when employed for giving citrated blood, be provided with a straight throughway from barrel to nozzle. The most serviceable needle is 18 s.w.g. with a tube length of 1¼ to 1½ inches. For children a smaller needle, 20 s.w.g., may be necessary.

The advantages of interposing a syringe between needle and tubing, both when taking and giving blood, are: (1) It acts as a handle for manipulating the needle. This and the eccentrically placed nozzle facilitate venepuncture. (2) It makes it easy to tell, by a slight withdrawal of the piston, if the vein has been entered. (3) Spilling of any blood is avoided. (4) The piston, by opening or shutting off the flow of blood, renders a clamp unnecessary.

Both syringes and needles are supplied by Down Bros., 21, St. Thomas's Street, London, S.E.1.

Nova et Vetera

THOMAS JOHN MACLAGAN, 1838-1903

Amidst a continuous deluge of centenaries the names of men who have helped to relieve the burden of mankind's pain will always find an echo in its heart. It is as a humanitarian of the medical profession that Thomas John Maclagan is gratefully remembered in the centenary year of his birth. After taking the M.D. at Edinburgh in 1860 and studying in Paris, Munich, and Vienna, Maclagan practised in Dundee until 1879, when he moved to London. Here he rapidly acquired a large and fashionable practice, numbering among his patients his countryman Thomas Carlyle. He was also physician-in-ordinary to the Prince and Princess Christian of Schleswig-Holstein. Though he lacked the necessary facilities for research through not being on the staff of one of the larger teaching hospitals, his keen critical mind and his accurate powers of observation served him well in the investigations which he undertook in private practice.

Salicin for Rheumatic Fever

As the result of two years' study appeared his paper, "The Treatment of Acute Rheumatism by Salicin" (*Lancet*, 1876, **1**, 342, 383), which at once attracted professional attention, revolutionized the treatment of the disease, and is to-day one of the classics in medical literature. It was later expanded and published in book form under the title *Rheumatism: Its Nature, Its Pathology, and Its Successful Treatment* (London and New York, 1886; second London edition, 1896). Rejecting the neurotic and the lactic acid theories of rheumatism, the author suggests in their place the miasmatic theory, according to which the rheumatic poison enters the system from without: rheumatism is due to the life-process of a parasite having its special nidus in muscles and in the fibrous tissues of the joints and the heart. Noting the analogy between rheumatic fever and malaria, Maclagan is impressed by the fact that cinchona trees grow most readily in malarial districts, and, arguing that Nature would similarly provide a remedy for rheumatism in regions which favour its occurrence, he turned his attention to the willow, employing salicin with success, particularly in the acute and subacute forms of the disease. To give the drug in routine fashion of ten grains three times a day or four-hourly, he taught, was to bring it into disrepute and to court failure. He insisted on giving large doses of twenty or thirty grains every hour for six doses on two succeeding days until pain subsided and temperature became normal.

Before the publication of his paper salicin was kept by chemists merely as a curiosity which was sold at two shillings an ounce. The price speedily rose to as high as twelve shillings, and at one time, as the demand exceeded the supply, the drug ceased to be quoted in the druggists' monthly lists. Before the introduction of salicylates rheumatic fever, with its agonizing pain, restless nights, and drenching sweats, was the despair of physicians. In the therapeutic armamentarium of modern medicine the salicylates have taken their place as efficient analgesics and antipyretics. Their specific action on the rheumatic poison is now doubted, and the belief that they can prevent heart disease and shorten the course of the illness is slowly dying out.

A kindly, honest, unselfish character, Maclagan was exuberantly self-reliant. A keen sportsman, he yearly spent his autumn holiday on the moors of Scotland. He died at the age of 65, after a gastro-enterostomy for cancer of the stomach. It scarcely detracts from his fame to mention that a decoction of willow-tops had long before him been a popular remedy for rheumatic fever among the Boers and Hottentots.

W. R. B.

THE FOUNDER OF THE SURGEON-GENERAL'S LIBRARY

The April number of the *Bulletin of the Johns Hopkins Hospital* contains a series of papers to commemorate the centenary of the birth of John Shaw Billings,[1] who was characterized by Professor Welch as the "wisest man I ever met." Billings was known to the medical profession throughout the world as the virtual founder of the Surgeon-General's Library at Washington and as the inventor of the Index Catalogue. The son of a farmer, the outbreak of the Civil War found him a demonstrator of anatomy at the Ohio Medical College, just beginning to think about entering a general practice. He volunteered for medical service with the Confederate Army, passed first in the examination for a commission, and was attached to the Potomac Army. Here he saw service at the battles of Chancellorsville and Gettysburg in 1863, and wrote lively accounts of them to his wife. He was then sent to New York with the troops employed in quelling the riots which had broken out in the city, and, having proved his worth, was relieved of duty in the field and was assigned to the Washington branch of the Medical Director. Soon afterwards he went to the Surgeon-General's Office in the War Department. Here he was employed in the problems of military sanitation, and did much to improve the conditions under which the Army lived in the barracks and hospitals. He acted for a time as Curator of the Army Medical Museum, but, always a lover of books, he found his real *métier* in building up and cataloguing the Library of the Surgeon-General. Of those early days I must be one of the last English survivors who actually saw him at work on the Index Catalogue. He spent a week-end with us when the Sydenham Society was publishing Mayne's *Lexicon of Medical Terms*. His first request of my mother was that he might have a washing-basket and a large pair of scissors put in the drawing-room. She consented, and during the whole evening he occupied himself in cutting out articles from a trunkful of journals which he had brought with him, talking all the time and saying that he would sort them out on the voyage home.

J. S. Billings in Other Roles

The Library did not exhaust his energies. He did much to improve the standard of medical education in the United States, and took an active part in the building of the Johns Hopkins Hospital, where he served as professor of hygiene and of the history of medicine. He outlined the scheme of study for the medical students, and was in advance of his time when he recommended that comparative medicine should be taught. Being thus experienced in building and in libraries, his services were wisely utilized when it was decided that the Astor and Lenox libraries should be consolidated as the New York Public Library. The amalgamation was carried out and Billings was appointed director early in 1896.

Billings led a full, useful, and happy life. It was said of him that he was one whose judgment you sought on any difficult subject, and you pinned your faith to him more than to any man of your acquaintance. He was wise because he was under no illusions. He got at the heart and essence of things. He was eminently a sane man who knew what it was best to do under the circumstances and what it was practicable to do. This quality was associated with wide vision and high ideals.

The various contributions are illustrated with a series of well-reproduced photographs showing Billings from youth to age. The papers are written by Lieutenant-Colonel E. E. Hume, Dr. Alan M. Chesney, Mr. Sanford V. Larkey, and Mr. H. M. Lydenberg.

D'A. P.

[1] See *British Medical Journal*, April 9, 1938, p. 796.

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NATIONAL INSURANCE IN NEW ZEALAND

The position with regard to national health insurance is not the same in New Zealand as in Australia, but it is at least equally important and urgent. The Government of the Dominion has now introduced in the House of Representatives a Social Security Bill which embodies its proposals both for superannuation allowances and pensions and for health insurance. Considerably more than a year ago the Government announced that it had a "plan" for these purposes, that its Bill would be immediately introduced into Parliament, and that the scheme would become operative on April 1, 1938. Whatever may have been the case with reference to superannuation, inquiry soon showed, however, that no such plan relating to national health insurance was in existence; that what was in the mind of the Government should more properly have been described as an "idea"; but that, nevertheless, the project of precipitate action was still adhered to and proclaimed. Governmental study of the actuarial and the medical aspects of what was evidently intended to be a far-reaching and complicated scheme of a kind of which the proposers had little knowledge and no experience had been quite perfunctory, and its effects upon existing medical practice and upon non-Government hospitals had not been taken into account. So far as any information could be extracted from members of the New Zealand Government it became evident that its suggestions were to be based upon ideological principles rather than on practical requirements, and a little later, when the reports of not very authoritative committees on the subject came forward, it was found that their major recommendations suffered from the same fundamental defect, even though many suggested details sensibly following those of the English system. In these circumstances the efforts of the New Zealand Branch of the British Medical Association were mainly directed towards securing a postponement of action in order to afford what it was hoped would be adequate opportunity for further inquiry and consultation as to the extent of any such scheme needed to meet the requirements of the Dominion, and as to its effect upon medical practice and hospital interests.

In their immediate object these efforts were successful. Mr. Fraser, the Minister of Health, was not unsympathetic and became convinced that there was room for further inquiries, and that representatives of a number of affected interests ought to have an opportunity of securing consideration of their opinions and suggestions. To a limited extent such opportunities have been afforded, but they have not been as full or prolonged as was really necessary, since it became clear that, whatever might be the evidence produced, the Government as a whole was not going to be moved from its fanciful project for a health insurance scheme that should include the whole population of the Dominion. As the basis of discussion with the New Zealand Branch of the Association the Government had accepted the memorandum presented to it by the Branch, which was published as an addendum to the report by Sir Henry Brackenbury of his visit to New Zealand in our *Supplement* of February 12, 1938 (p. 85). In this memorandum the Branch made it clear that, though it was not convinced that the ground had been sufficiently prepared, it was willing to accept and to co-operate in a system which offered a complete medical service to those members of the community who were not in a position to secure it for themselves. This was an offer of very great value and importance, far removed from any selfish or obstructive motives. Instead, the Government has preferred—apparently from an erroneous belief that this is necessitated by some abstract socialistic ideal or principle—to present to Parliament a scheme for an incomplete medical service for the whole population whether they can provide it for themselves or no. The medical profession of the Dominion in its negotiations has secured for the hospitals which are under private or church management a less unfavourable position than had been originally proposed, and no doubt all, or nearly all, the differences on less important matters mentioned in the memorandum could, with further discussion and good will, have been satisfactorily adjusted; but on this major proposal of a universal clientele for the scheme there was an irreconcilable divergence, and the Branch was driven to tell the Government that further discussions were useless. No doubt certain members of the Government had made up their minds to create this situation from the beginning.

This is really a proposal to socialize the medical profession in advance of the rest of the community. No doubt if in a democratic country the people had definitely and deliberately determined to establish a completely socialistic state of society the medical profession would have to submit to this along with all other professions, trades, and occupations. No doubt, also, the particular form of socialization proposed—through universal compulsory contributory insurance—is less objectionable than other methods that can be conceived. The people of New Zealand have, however, not so decided, and there seems no reason why the medical profession alone should be chosen for this experiment. The profession in New Zealand is convinced that such action is not needed by reason of the condition of the country, that the proposed system would be unfair to the doctors and not nearly so conducive to the general health as the alternative they themselves suggest. The profession is at least as anxious as any other section of the community to promote public health and welfare, and its experience in this matter makes its opinion even more valuable than that of any other section. Though the cost of the proposals is not specifically a medical matter, medical practitioners cannot be indifferent to it. The estimated cost of the whole measure, including pensions, is for the first year £15,000,000, gradually rising in later years to £25,000,000, this to be borne by a population totalling less than a million and a half. Mr. Nash, the Minister of Finance, says that this can easily be met, but the truth of his statement is not obvious. No doubt Parliament will pass the Bill if the Government persists. There will, however, be a General Election before the date at which the Act comes into operation, and there may be opportunity for modification. In any event the attitude of the New Zealand Branch of the Association is clear and determined. A poll has been taken and more than 95 per cent. of the members have declared themselves in opposition to the scheme. Such help as is required from the central office of the Association will be willingly forthcoming. It will be remembered that the Central Council has accepted the report of Sir Henry Brackenbury already referred to. In it he forecast the development of the present situation and recommended that in that contingency the fullest possible support, financial and other, should be given to the profession in New Zealand. With such support, and if the profession in the Dominions maintains its united front, it is not unreasonable to expect a successful issue. Perhaps it is not even now too late for the Government of New Zealand to take some action to avoid what would be a very unfortunate and undesirable struggle.

THE NEW U.S.A. FOOD AND DRUG ACT

The Federal Food, Drug, and Cosmetic Act was approved by the President of the United States on June 25, and after a year's interval will replace the Food and Drugs Act of 1906. An outstanding provision of the new measure is one which declares it an offence to make false claims of curative effects on the labels of "patent" medicines, irrespective of whether the claims are made with fraudulent intent. This is an important advance, because previous legislation had checked the advertising of false claims in the U.S.A. but had not interfered with statements made on the labels, and full advantage was taken of this loophole. No one can foretell how laws will work in practice, but the general intention of the 1938 Act is to make it a dangerous business to promote the sale to the public of medicines by means of false claims of curative properties. This legislation may have repercussions in our country, because many American "patent" medicine vendors will presumably have to look for new markets for their wares, and Great Britain is the only large English-speaking community in which the law does nothing to protect the public against fraud in this field.

The new Act covers a very wide ground, and its scope is explained in a recent editorial in the *Journal of the American Medical Association*.[1] One valuable provision is that no new drug may be sold to the public unless its safety is generally recognized by experts. The object here is to prevent any repetition of such tragedies as the wholesale poisoning lately caused by the sale of sulphanilamide dissolved in diethylene glycol. Restrictions of this nature are an obvious necessity. There is practically no limit to the number of new compounds which the organic chemist can make, and the pharmacological actions of only a tithe of those produced are known. It is ridiculous to allow the testing of the safety of a new compound by means of its distribution to the public. The new Act requires any drug that is not designated by a pharmacopoeial name to be labelled to show its common or usual name. This provision applies also to preparations containing several active ingredients. It thus abolishes secret remedies and, furthermore, will check a form of semi-secrecy that is becoming more and more popular—namely, the sale of a medicine under a fancy proprietary name accompanied by a "disclosure" of its nature by a statement of its chemical formula in some unfamiliar form. The Act also prescribes special warnings of the presence in medicines of various powerful or habit-forming drugs. The sale of most of the drugs mentioned is restricted in this

[1] July 23, 1938, p. 324.

country by means of the Poisons Acts or the Dangerous Drugs Acts, but the U.S.A. Act includes bromides in this list, which is an important safeguard to the public. The sale of foods represented as having value for special dietary purposes is increasing very rapidly, and the new Act enables the Government to require the labels on these preparations to give such information concerning their vitamin, mineral, and other dietary properties as is deemed necessary to inform the purchasers fully regarding their value. The control of cosmetics instituted by the Act is a new departure, and the regulations are somewhat tentative. One noteworthy provision is that which forbids the inclusion of ingredients when it can be shown that they may render the cosmetic injurious to the users. This should suffice to check the sale of face creams containing sex hormones, a practice for which a demand has been created in the United States.

The points mentioned above suffice to show that the new legislation represents a serious effort to protect the public of the United States from fraud in relation to the sale of medicines, and also against accidental poisoning due to rash experiments with compounds whose properties are unknown. The *Journal of the American Medical Association* points out that the effectiveness of the new law depends upon the manner in which it is administered, and this in turn depends on whether Congress allots enough money to provide adequate staff and machinery. As regards this country, we are forced to admit that the previous legislative control in America has been in advance of our own, and the new Act will make the difference still more striking and discreditable to our rulers.

VITAMIN C IN MILK

Cows' milk is far from being an abundant source of ascorbic acid (vitamin C); nevertheless it is desirable to retain as much as possible of this labile substance. The work of Kon and his colleagues at Reading has shown that in the cow's udder ascorbic acid is present in the reduced condition, but that as the result of subsequent exposure of the milk to light it is oxidized and later rendered biologically inactive. Exposure of a bottle of milk to sunlight on the doorstep of a house for half an hour may lower its ascorbic acid content by 50 per cent. Heating, as in pasteurization, accelerates the inactivation of the oxidized form, but has apparently no effect on the reduced form. In other words, milk that is protected from light can be pasteurized without destruction of the ascorbic acid. Since both ascorbic acid and oxygen are colourless it is a little difficult to understand why the short waves of visible light, which are known to be active in the photochemical oxidation of ascorbic acid, are absorbed by these substances. Recent observations by Hand, Guthrie, and Sharp[1] in the United States of America suggest that lactoflavin (vitamin B_2), which absorbs blue light, plays a considerable part in this reaction. If lactoflavin is removed from the milk by adsorption ascorbic acid is no longer oxidized by exposure to light. Prolonged exposure of milk to sunlight destroys both lactoflavin and ascorbic acid. If fresh ascorbic acid is now added no further destruction occurs in the presence of light, but if lactoflavin is added as well ascorbic acid is rapidly oxidized. In mares' milk, which contains little or no lactoflavin, ascorbic acid is relatively more stable than in cows' milk. It thus appears that for the photochemical oxidation of ascorbic acid both dissolved oxygen and lactoflavin are required. If the vitamin C content of milk is to be preserved it is obviously important to protect the milk from light as far as possible. This is not always easy, particularly when the milk has to be distributed on the rounds in bottles. The American workers show that very satisfactory results can be obtained by freeing the milk from dissolved oxygen. The milk is subjected to an evacuation process in which the oxygen is swept out by the water vapour. The method can be applied before or after pasteurization. Provided the milk is cooled and bottled in such a way as to prevent access of oxygen it can withstand exposure to light without suffering any decrease in its content of ascorbic acid. Pasteurized milk treated in this way was found to contain 20 mg. of ascorbic acid per litre after being kept at 1° to 3° C. for seven days, while untreated raw milk had its initial content of 20 mg. per litre reduced in this time to 2 mg. The evacuation process is also of value in removing off-flavours due to oxidation changes in the fat. Whether this method will prove suitable for adoption on a commercial scale is not discussed, but from an academic point of view the results are of undoubted interest.

SUICIDE BY TUBERCLE BACILLI

We are rarely given the opportunity to record observations in man in which the conditions are comparable to those in experimental animals. A case reported by A. Lemierre and P. Ameuille[2] is noteworthy not only for the circumstances leading to the illness of the patient but also for the light which the clinical and pathological observations throw upon certain points in the aetiology of tuberculosis. A medical man aged 29 with a "history of tuberculosis in the family," who had probably suffered from pulmonary tuberculosis himself a few years earlier and who at all events had shown a positive Pirquet test a short time before the onset of his illness, gave himself, in an attempt at suicide, an intravenous injection of virulent tubercle bacilli. Two days later a pyrexia began which persisted until his death three months from then. A radiograph nine days after the inoculation showed normal lung fields, but in one taken thirty-two days after the inoculation the typical appearance of miliary tuberculosis was seen; twelve days before death there was confluence of these shadows. Enlargement of the spleen was observed within the first few days of

[1] *Science*, 1938, **87**, 439.
[2] *Bull Mém. Soc. méd. Hôp. Paris*, 1938, **54**, 286.

the illness, but there were no cough, sputum, or dyspnoea and no physical signs in the lungs until shortly before the man died—from meningitis. Repeated examination of the blood showed at first a relative mononucleosis with only 53 per cent. neutrophils, and then a gradual increase of the latter to 90 per cent.; eosinophils were absent throughout. It is of great interest that ten days after the inoculation no tubercle bacilli were isolated from the blood by Loewenstein's technique or by animal inoculation, showing that the organisms had already by that time established themselves in the tissues. Though it is almost certain that bacilli reached other organs in the body, clinically lesions were found only in the lungs and meninges. Finally the case appears to show conclusively that in certain circumstances at all events exogenous reinfection may overcome immunity acquired by previous tuberculous infection.

METHYL CELLOSOLVE AS AN INDUSTRIAL POISON

Much has been written on the toxicological properties of ethylene glycol and the solvents derived from it. The use of ethylene glycol as a substitute for glycerol in certain foodstuffs has been opposed on the grounds of its oxidation in the body to oxalic acid. Diethylene glycol has recently led to fatalities from its use as a medium for certain medicinal agents. Some interesting and important reports[1] have now appeared on the toxic properties of the valuable cellulose acetate solvent, methyl cellosolve (ethylene-glycol-mono-methyl-ether), for which no toxic effects on man have hitherto been recorded. Not the least instructive features in these reports are the description of the detailed way in which the investigation of the affected workers was carried out and the clear-cut demonstration of the nature of the symptoms. The workers were employed in a shirt factory, where solvents were used for stiffening the collars of the shirts. The collars were dipped in a solution consisting of methyl cellosolve and ethyl alcohol denatured with methyl alcohol, ethyl acetate, and petroleum naphtha. After dipping, the collars were dried and pressed. The workers wore rubber gloves during these operations. The clinical picture of the poisoning is summarized thus: (1) Severe smarting, burning, and watering of the eyes, with conjunctival irritation. (2) Toxic encephalopathy, indicated by personality change, frequent dizzy and faint spells, sleepiness; loss of interest in normal amusements and activities; general hypertonicity, exaggeration of all reflexes; dilatation of pupils, ankle clonus, moderate ataxia, and positive Romberg sign. (3) Anaemia of moderate severity associated with granulopenia and a marked increase in the proportion of immature neutrophils: the anaemia was of the macrocytic type with a high colour index. (4) Additional symptoms were gastro-intestinal disturbance, vomiting, ketosis, nocturia. In two cases with marked symptoms removal from exposure to the solvent combined with appropriate treatment for the anaemia led to complete clinical recovery. As a result of these findings on two cases the New York State Department of Labour (Division of Industrial Hygiene) undertook a comprehensive study of employees in a shirt factory where methyl cellosolve was used in conjunction with denatured alcohol. All the young men examined (nineteen) had abnormal blood pictures, but clinically they fell into three groups: negative clinical picture; abnormal neurological physical signs but no symptoms; abnormal neurological physical signs and symptoms of fatigue and drowsiness. The outstanding abnormality of the blood was the high proportion of immature neutrophil granulocytes in every case. There was also noticeable lowering of the platelet count. The blood picture was summarized as that of a macrocytic anaemia. There was also evidence of individual susceptibility. It is cautiously suggested by the authors that methyl cellosolve was the responsible agent, and that it is desirable to keep the concentrations of this substance in the air below 25 parts per million. Since then workers have been exposed to fumes of methyl alcohol and other denaturants, and control observations made on workers exposed to acetone and methanol in a plant engaged in a process like the one previously considered but in which methyl cellosolve was not used. The concentrations of methyl alcohol and acetone at the breathing levels of the workers were 25 p.p.m. and 45 p.p.m. respectively. At the plant where the methyl cellosolve was used the concentrations in the air when the windows were wide open were: methyl cellosolve 25 p.p.m., ethyl alcohol 70 p.p.m., methyl alcohol 5 p.p.m., ethyl acetate 2 p.p.m., petroleum naphtha 0.3 p.p.m. All these concentrations were very greatly increased if the windows were closed. Since the methyl cellosolve mixture was used in open trays and shallow pans, increases in local temperature and deficient ventilation, or, on the pressing machines, clogging of the exhaust apparatus, must rapidly have raised the concentration of methyl cellosolve in the air. The practical outcome of these observations is the clear indication to users of methyl cellosolve that stringent precautions must be applied to prevent absorption of the vapour.

[1] *J. industr. Hyg.*, 1938, **20**, 134.

EXPERIMENTS ON ANIMALS IN 1937

The recently issued Home Office return[1] relating to experiments on living animals records an increase in the number of experiments performed. The total figure for 1937 was 918,960, including 40,319 experiments carried out with anaesthetics, and 878,641 experiments comprising inoculations, hypodermic injections, feeding experiments, and other proceedings performed without anaesthetics. The return states that in no case was a certificate dispensing entirely with the use of anaesthetics allowed for any operation more severe than subcutaneous venesection. Serious operations are always required to be performed under an anaesthetic. A condition attached to all licences was that if an animal was found to be suffering from severe pain which was likely to endure it should be painlessly killed. Except in certain experiments dealing with the efficiency of antiseptics the regulations demand the use of full antiseptic precautions, in order that wounds may heal as painlessly as possible. During the year thirty-seven

[1] *Experiments on Living Animals*, 1937. H.M. Stationery Office, 1s.

licensees performed 35,008 experiments in the course of cancer investigation; 3,290 of these were operations requiring anaesthetics; the remainder were almost entirely inoculations into mice or exposure of animals to radiations. Three hundred and twenty-two licensees performed over 179,000 experiments for Government Departments and other public bodies. In addition, more than 346,000 experiments were carried out in the course of the preparation and testing of antitoxic sera and vaccines and for the testing and standardizing of drugs. The inspectors made 901 visits to registered places during the year, in most cases without previous notice, and witnessed a number of experiments. Only seven cases of irregularity were reported, none of them serious; the offenders were admonished. The advisory committee appointed to assist the Home Secretary with advice in the administration of the Act consisted of Lord Atkin (chairman), Dr. H. Morley Fletcher, Sir Farquhar Buzzard, Mr. W. Sampson Handley, Sir D'Arcy Power, Mr. Wilfred Trotter, and Sir John Herbert Parsons.

SENSITIVITY TO SUNLIGHT

This is the time of year when many patients have discovered for themselves the existence of erythema solare, for the occurrence of which the explanation is comparatively simple. Those disorders of the skin associated with an abnormal degree of sensitivity to light, however, are not so easily explained. The most familiar is the form known as "hydroa aestivale," in which blisters followed by scarring occur on the skin of those who suffer from a congenital abnormality of haemoglobin metabolism in which great excess of porphyrin appears in the urine. J. T. Brugsch and L. A. Brunsting[1] in reporting on a study of porphyrin excretion in various skin disorders point out that haematoporphyrin, which was supposed to be excreted in the urine in the congenital or primary cases of this metabolic disorder, does not in fact exist in normal human metabolism and is a laboratory product of a special form of blood decomposition. The most significant end-product of normal porphyrin metabolism appears to be coproporphyrin, which is excreted in bile, urine, and faeces. The largest excretion of porphyrin occurred in cases of exfoliative dermatitis, following a reaction of sensitivity to neoarsphenamine, and whenever there was evidence of severe derangement of the general metabolism. Ordinary sensitivity to light does not appear to affect the excretion of porphyrin. Another skin disorder produced by some inborn sensitivity to sunlight is xeroderma pigmentosum, and in reporting two brothers suffering from this malady A. G. Silberstein[2] records that there was absence of any evidence of abnormal excretion of porphyrin. The special point of interest in these familial cases was the simultaneous occurrence of abnormalities of the speech and gait and marked mental deficiency. It is suggested that there may be some associated degeneration of the nervous system analogous to the degenerative lesions of the skin. A further analogy is seen in those cases of polyneuritis associated with so-called haematoporphyrinuria. These cases of xeroderma and those of primary porphyrinuria already mentioned represent a congenital hypersensitivity to sunlight: acquired forms due to certain toxic drugs are well recognized. Sulphonal poisoning is perhaps the best known, and in recent times the risk of exposing to sunlight patients under intensive treatment with the sulphanilamide compounds has been recognized. Light sensitization in animals following the ingestion of certain poisonous plants has been recorded by F. P. Mathews[3] in a fascinating study of lechuguilla poisoning. Serious losses among goats and sheep and to a limited extent among cattle in the south-western districts of the United States of America have long been traced to the eating of the leaves of the *Agave lechuguilla*, a plant of Mexican origin and of the same genus as the decorative American aloe which occurs in Europe. Experiment has shown that this plant produces a hypersensitivity to light less than six hours after its administration. Erythema, pruritus, lacrimation, and oedematous swelling of the face and ears are some of the symptoms described. Nervous disturbances were also observed in the experimental animals; they are of interest in view of the suggested nervous affection in porphyrinuria and in xeroderma pigmentosum. The photodynamic agent in lechuguilla poisoning has not been identified, but it differs from the toxic saponin causing changes in the liver and kidneys and responsible for the animal mortality. The stupid self-induction of erythema solare by devotees of the modern sun-bathing cult may perhaps be paralleled by the suicidal tendencies of the Texas livestock!

[1] Brugsch, J. T., and Brunsting, L. A. (1938). *Proc. Mayo Clin.*, **13**, 167.
[2] Silberstein, A. G. (1938). *Amer. J. Dis. Child.*, **55**, 784.
[3] Mathews, F. P. (1938). *Arch. Path.*, **25**, 661.

THE EDUCATIONAL NUMBER, 1938

The *British Medical Journal* dated September 3, 1938, will be the annual Educational Number. Its contents, as in previous years, will include a full account of the requirements of the General Medical Council and of the universities and other licensing bodies in Great Britain and Ireland, as well as information about the opportunities offered by the various medical schools and other teaching institutions and the fees charged by each. The details given have been revised and brought up to date by the authorities concerned. These sections, the object of which is to furnish a handy guide to intending students of medicine, are supplemented by articles for newly qualified practitioners on such matters as post-graduation study (with special reference to the British Postgraduate School at Hammersmith), the public medical services at home and abroad, tropical medicine, psychological medicine, and the various special diplomas. The opening article for our forthcoming Educational Number, written by Sir Walter Langdon-Brown, is entitled "The Medical Curriculum and Present-day Needs."

The Prime Minister, Mr. Neville Chamberlain, will open the new King's College Medical School of the University of Durham at Newcastle-on-Tyne on October 8.

SURGICAL PROCEDURES IN GENERAL PRACTICE

This is one of a series of articles contributed by invitation

DISLOCATIONS AND FRACTURES OF THUMB AND FINGERS

BY

DAVID TREVOR, M.S., F.R.C.S.

Bony injury to the hand, especially the fingers, is very common on account of the widespread use of complicated machinery, which has increased the number of fractures of the finger and thumb. If these injuries are treated inefficiently much permanent disability may result: even with efficient modern treatment there is occasionally an incapacitating degree of disability. Hence the study of the treatment of fractures and dislocations of the hand digits has an important economic aspect—the reduction of the amount of resulting disability and prevention of excessive loss in wage-earning capacity. A working knowledge of the method of production and the resultant deformity of any fracture or dislocation is essential for rational treatment, and this aspect will be surveyed briefly.

Type of Anaesthesia

What type of anaesthesia should be used in dealing with "finger fractures"? A local anaesthetic such as 2 per cent. novocain is suitable. It should be kept in a rubber-capped bottle, the cap being cleansed with ether immediately previous to withdrawing some of the solution: the novocain must be sterilized immediately before use on each occasion. If local anaesthesia is employed the site of the fracture and surrounding parts must be cleansed with soap and water, ether, and then 2 per cent. iodine solution. About 3 to 5 c.cm. of 2 per cent. novocain is injected in the region of the fracture, into the blood extravasation. Gentle kneading is then done, and about five to ten minutes is allowed for the anaesthetic to take effect. Local anaesthesia is to be preferred if there is a shortage of assistance. It should not, however, be used for (1) any fracture which is more than about five days old; (2) children or nervous women; (3) open fractures.

In place of a local anaesthetic nitrous oxide can be employed. It is, however, much better to use gas and oxygen with a minimum of ether, as with gas alone, in the case of a fracture such as Bennett's, it will be difficult to accomplish reduction and fixation before the patient is "round."

Bennett's Fracture

Most of the movements of the thumb, especially extension, abduction, and opposition, occur at the saddle-shaped carpo-metacarpal joint, any mechanical derangement of which will cause interference with the full function of the thumb. Bennett's fracture is a fracture-dislocation of this joint, the dislocation being of equal importance to the fracture. It is produced by indirect force applied to the thumb in an adducted position. The line of fracture runs obliquely, so that a small fragment of bone with practically no displacement sustains the greater part of the articular surface of the base of the first metacarpal bone, while the remaining portion of the metacarpal bone bears a small portion of the articular surface and is displaced outwards and upwards.

It should be stressed that it is most important to have an *x*-ray examination in both antero-posterior and lateral planes whenever there is the least suspicion of a fracture: occasionally an oblique view is required in addition to exclude a fracture such as that of the scaphoid bone of the wrist-joint.

Treatment

Local anaesthesia is ideal for a Bennett's fracture. The skin around the fracture site is thoroughly prepared with ether and 2 per cent. solution of iodine. About 3 to 5 c.cm. of 2 per cent. novocain is injected into the fracture, and about 1 c.cm. into the pad of the thumb for the insertion of a stirrup. When the anaesthetic has had time to take effect the stirrup is inserted transversely through the soft tissues of the pad of the thumb, passing on the palmar aspect of the terminal phalanx but not through the bone. Traction is applied by an assistant in the long axis of the thumb to correct upward displacement, while countertraction is produced by passing round the arm, with the elbow flexed at a right angle, a strong flannel bandage which is fixed to a wall or to a radiator; traction and countertraction are maintained throughout the reduction. Very strong pressure is then applied to the base of the thumb in order to reduce the outward displacement.

When the deformity has been reduced satisfactorily an unpadded plaster-of-Paris slab is applied to the dorsal aspect of the forearm from just below the elbow down to the knuckles; a plaster bandage is then bound round the forearm and base of the thumb up to its interphalangeal joint as in Fig. 1. The plaster must be firmly moulded

FIG. 1.—Bennett's fracture—reduced under local anaesthetic (2 per cent novocain) and immobilized in plaster-of-Paris with continuous extension.

over the base of the metacarpal bone so as to prevent any recurrence of the outward displacement. A malleable metal splint, about three-quarters of an inch wide and long enough to extend from half-way up the forearm to three inches beyond the tip of the thumb, is then incorporated in the plaster: the end of the metal splint should have been bent at a right angle for about half an inch, and should have a central hole to take a hook for traction purposes. This hook is placed through the hole and its end engaged with the stirrup: a screw is next wound on to the hook beyond the splint and gradually tightened until the thumb is firmly extended. The plaster is allowed to set and a radiograph is then taken. If the traction force is insufficient it can be increased by tightening the screw. By this method accurate reduction can be easily obtained.

The fixation is maintained until some evidence of union in the nature of callus can be detected on *x*-ray examination: this is usually a matter of three to five weeks. During that time the patient is instructed to use his fingers actively, there being no plaster in the palm of the hand to prevent full flexion of the fingers. After the plaster has been

removed a certain amount of stiffness of the thumb will result, but with active use this stiffness will gradually disappear and full function will be restored in about eight weeks or so from the onset of treatment.

Fractures of the Metacarpal Bones

The metacarpal bones may be fractured either by direct or by indirect force: with the former, as often happens when a hand is caught in machinery, usually more than one bone is fractured and there is much associated injury to the surrounding soft structures—for example, to the tendons and to the skin—causing at times an open fracture. When indirect violence is responsible for the metacarpal fracture there may be some displacement with backward angulation, due chiefly to the pull of the interossei muscles, but undoubtedly influenced to some extent by the normal palmar concavity of the metacarpals. When the metacarpal bone of the thumb is affected the fracture is generally situated towards the proximal end of the shaft, is transverse, and the distal longer fragment is adducted relatively to the smaller proximal fragment.

TREATMENT

Treatment of fracture of the thumb metacarpal consists essentially in the correction of this adduction deformity of the distal fragment by very powerful abduction of the extended thumb, which is then, together with the wrist-joint, immobilized in plaster-of-Paris, the thumb being held in abduction and fixed up to but not including the interphalangeal joint: all the fingers are kept free for full active movements. Fixation is maintained for three to four weeks, when union is as a rule well advanced. If the fingers have been freely used the residual stiffness of the wrist-joint and thumb quickly disappears.

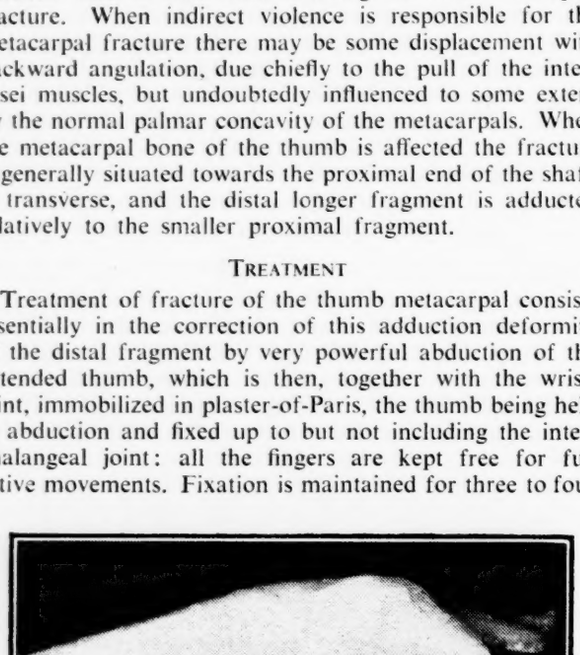

FIG. 2.—Fracture of neck of fifth metacarpal bone, causing angulation of metacarpal head—a fairly common type of fracture. Under local anaesthetic (2 per cent. novocain) the displacement was reduced, then immobilized in plaster-of-Paris, the little finger being fixed to a finger-splint, bent as shown in the illustration.

In fracture of the base of any of the finger metacarpal bones there is practically no displacement, on account of strong ligamentous attachment. The fracture should be immobilized by an unpadded plaster-of-Paris slab from just below the elbow to just distal to the knuckles, with a circular plaster bandage fixing the slab to the forearm and wrist. Adhesive strapping attaches the lower end of the slab to the hand around the knuckles in such a way that full range of movement of the fingers is possible. A fracture of the shaft or of the head of a metacarpal bone *without displacement* is treated in similar fashion.

Any displacement of a shaft or head metacarpal fracture is reduced by long-axis traction through the finger of the affected metacarpal bone, while countertraction is applied to the forearm; strong local pressure will then correct any angulation. With traction maintained, a plaster-of-Paris cast is applied as described for basal fractures, with the exception that the slab is carried further beyond the knuckles and is well moulded in over the dorsum of the injured metacarpal or metacarpals so as to prevent a recurrence of backward angulation. A malleable metal splint half an inch wide is then incorporated in the plaster on the anterior aspect of the forearm and hand, and the finger of the affected metacarpal bone is fixed to this splint in a flexed position by means of either adhesive plaster or plaster-of-Paris (Fig. 2). If one or two metacarpal bones have been fractured, with resulting displacement, each finger is treated with a separate finger-splint; but with involvement of three or more metacarpal bones it is advisable to immobilize the hand by bandaging the fingers over a roller bandage placed in the palm. This latter method has the disadvantage that active movements of the unaffected fingers cannot be performed while the fracture is being immobilized; but when three fingers at least are immobilized it is obvious that active movements will be in abeyance—hence the disadvantage disappears.

A metacarpal fracture should be immobilized in plaster on an average for four to six weeks, stress being placed on active movements of the un-immobilized fingers during this period. The stiffness of the immobilized fingers will gradually disappear with active use over a period of generally three to four weeks, especially so if the un-immobilized fingers have been freely used; there is no need for any massage or passive movements to be prescribed for the residual stiffness of immobilized fingers—in fact, such treatment may be harmful and cause more stiffness and pain.

(To be concluded)

MEDICAL UNEMPLOYMENT IN INDIA

The *Calcutta Medical Journal* for July has an interesting editorial on unemployment in the medical profession in India. It makes an appeal to the senior members of the profession to take stock of the situation and to do their utmost to change the plight of their young colleagues. It asks them to save the prestige and fair name of the profession.

It must be admitted that, in spite of the large size of India and the relatively few practitioners to the total population, many graduates of Indian universities are suffering great hardship. It is not overstating the case to say that a number of them are dependent on the charity of their relatives.

An Overcrowded Profession

The medical profession of India—and under this head I include only those trained in scientific medicine—is overcrowded. In 1937, when Aden came under the Colonial Office, the Aden Government advertised for eleven sub-assistant surgeons. Aden is a desolate spot, and to an Indian it represents service over-seas and wide separation from friends and family. The advertisement offered a salary equivalent to £170 per annum, rising in six years to a maximum of £256 per annum and an agreement in the first place for three years. They received no fewer than 1,465 applications. Of these 1,465 applicants, 14 held British qualifications, and 26 others held higher qualifications obtained in England—4 M.R.C.P.; 2 F.R.C.S.; and 8 D.P.H., 12 other diplomas. That there were 1,465 registered practitioners competing for a post in a subordinate position at a salary of £170 per annum outside their own country is sufficient proof of the very poor return a medical graduate obtains for his six or seven years' education and hard work.

The facts are that unless a graduate can obtain a Government appointment he cannot make a living in private practice outside the towns. It was hoped at one time that economic pressure would force these

graduates to settle down and practise in the rural areas. I have heard senior medical officers with a wide knowledge of India say that this was the only solution to the provision of medical relief in the rural areas. For this reason it would be to the benefit of India to see the profession reduced to its present condition. In making this statement they overlooked the fact that a rural area of reasonable size is unable to support a practitioner. The peasantry of India have no income to spare for medical treatment. To some extent they could pay in kind, but they certainly have no funds with which to pay an adequate fee in cash. Moreover, communications are poor, and in many provinces the inhabitants are scattered and live on their own homesteads separated by the fields they till.

The Hold of Indigenous Medicine

It is only among the highly educated classes that there is any real belief in scientific medicine. From time immemorial the peasant has been accustomed to go to his Ayurvedic or Yunnani physician for medical treatment. The indigenous practitioner's position in the village is supported by all the weight of tradition and religion. His family have practised for generations in the village, and the practice is handed on from father to son. The practitioner of scientific medicine has very little chance in competition with the indigenous practitioner in rural areas. Even in the towns a large proportion of the educated classes still believe in their indigenous systems of medicine. These systems of medicine are comparable with Western medicine in the days of Chaucer. Their theories and practice are much the same; nevertheless the people have the same faith in them as our peasantry and educated classes had in their physicians in Chaucer's time. Surgery, perhaps, has made greater progress in the minds of the people, largely because of the tangible results which are seen in cataract and hydrocele operations. The private practitioner in the small villages, however, is not concerned with surgery, but rather with the medical relief of the ordinary ills to which the villagers are subject. On the standard of living of an Indian peasant, not only is his advice expensive but so also are his remedies. The result is that his services are practically not utilized and even the best of practitioners find it difficult to make a living in the rural areas. Graduates born and bred in rural areas who have had a college career in Presidency towns learn to appreciate the amenities of life in towns and can no longer settle down to the quiet and primitive conditions of their local village, even if a living were available. The result is that almost all graduates start practice in the towns.

Scientific Medicine at a Discount

There are comparatively few large towns in India, as the population is mainly an agricultural one. Industries have centred round Calcutta, Bombay, Cawnpore, and Ahmedabad. Even in these towns a large proportion of the population still adhere to the indigenous system of medicine and will do so for many generations. The result is that the supply has outrun the demand for scientific medicine and the Indian universities are still turning out graduates for whom there is no employment.

No medical graduate starts his career with higher ideals and a stricter code of ethics than the Indian. He has received a good medical education and, given an opportunity, would maintain his professional standards and ethics at a high level. The severe pressure of economic facts, however, gradually wears him down and the necessity for making a living somehow leads to a lowering of both his professional standards and his ethics. Scientific medicine is having a hard fight to maintain itself in the face of fierce competition, and it can only win through in the long run by its better results and its high professional standards. It is, therefore, the concern of everybody interested in the spread of medicine in India to try to remedy the present deplorable state of affairs. Not only has the university graduate to compete with indigenous systems of medicine, but he has also to compete with a large number of practitioners who are trained to lower standards and are of an inferior status.

Three Competing Grades of Practitioners

In India three grades of practitioners are practising Western medicine. The first is the university graduate, fully trained and up to standards which the General Medical Council is able to recognize as equivalent to British standards. The second is the sub-assistant surgeon, who has a shorter course of training. He is turned out in larger numbers and starts with an inferior education. The third is the compounder, who has a short training in a dispensary. His real function is, as his name implies, a pharmacist. However, he frequently sets up in practice and competes with the two senior grades. Over and above this the graduate has to face competition from practitioners of homoeopathy, osteopathy, and others who have obtained, either by correspondence or by payment, diplomas from foreign schools and colleges. The populace as a whole are not able to judge the merits of these varying qualifications and regard all who hold them as practitioners of scientific medicine.

Possible Remedies

It is difficult to suggest a remedy for this state of affairs. There are some measures which can be taken. We have seen that restriction of output has become a feature of many industries. It would seem that some similar restriction should be placed on the output of practitioners in India, and that the supply should be adjusted to the demand. To ensure the spread of scientific medicine in India it is essential that all its practitioners should be of the very highest standard. More harm has been done to the spread of scientific medicine by the poor standards of practice than by any other single factor.

The first step therefore would appear to be the abolition of the sub-assistant surgeon's qualifications. This class starts with an inferior education and has a four-years course. In some provinces this has now been raised to a five-years course, but the general provision for adequate training is still very inferior. He is eligible for admission on the Provincial Register. He is generally of a lower social status and lower preliminary education than the university graduate. He is turned out in much larger numbers than the graduate and is a very severe competitor for practice.

The universities themselves should restrict their admissions to meet the demand. This is done to some extent at present, the admissions being considerably less than the number of applications, but even now selection needs to be more strictly applied. With the abolition of the sub-assistant surgeons the Government could assist by requiring that in future all Government and local authority dispensaries should be staffed by university graduates.

In most towns hospital abuse is general, and many of those attending hospitals belong to the educated classes who could afford to employ a private practitioner. More efforts might be made to restrict this without causing any hardship to the individuals. In industrial areas the introduction of sick insurance for industrial workers would afford employment to a large number of practitioners and leave the patients free to choose their doctor.

It is reasonable to suggest that the Indian universities themselves should take some action in this matter, and in association with the Government appoint a committee to inquire into the general conditions of medical practice in India, to make suggestions for the spread of scientific medicine, and propose measures for the relief of unemployment among medical graduates.

A. H. PROCTOR.

FRACTURE OF THE NECK OF THE FEMUR

A PERSONAL EXPERIENCE

BY

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It is often stated that doctors suffer from those diseases in which they are specially interested, and besides the classical examples of John Hunter, Robert Liston, and others, we must all have known contemporary consultants who have contracted the disease in the treatment of which they specialized. It seems only fitting, since I aspire to become an orthopaedic surgeon and look after a small fracture clinic, that I should myself sustain an unusual and severe type of fracture of the neck of the femur at (for this fracture) the early age of 34. I think it may be of value to put forward my recent experience of the various methods of treatment of this fracture from the patient's rather than from the surgeon's point of view. As it happens I have had a taste of all the methods at present in vogue with the exception of primary osteotomy—namely, sandbags, extension by adhesive plaster, extension by Kirschner wire, Whitman plaster, and the modern edition of the Smith-Petersen operation.

Ollerenshaw (1938) states: "It is probably safe to say that at the present time 95 per cent. of fractures of the neck of the femur are being treated by one or other modification of the Smith-Petersen nailing operation." However true this may be in Manchester, it is certainly not the case in London. When I was advised to have my own fracture nailed, I was told by one of the leading London orthopaedic surgeons that neither he nor any of the other surgeons doing ordinary consulting work in London had any great experience of this operation at present (a statement with which I am in agreement, from my own observation), and that the only men in London who had operated on many of these cases were to be found on the full-time staff of the L.C.C. hospitals. It was therefore arranged that I should be moved to one of these hospitals, where every care was taken of me and the operation was most expertly carried out. Even there, however, I was told that not nearly as many as 90 per cent. of the cases of fracture of the neck of the femur admitted to the hospital were "pinned."

This lack of opportunity to practise a new and expeditious method of treatment in the voluntary hospitals is due to the short-sighted policy of these hospitals in the past in refusing to admit cases which will "block a bed for three months." Now such cases are nearly all sent direct to the L.C.C. hospitals, and since most surgeons are unwilling to experiment with a new and difficult method on their private patients, I believe that the Whitman plaster or some form of extension may be regarded as the standard method of treatment practised in London—apart from the L.C.C. hospitals—at the present time. The history of my own case is as follows:

Case Report

February 4.—I slipped down in the passage at my home and struck the right thigh against a step. The sensation was absolutely characteristic, and I knew at once what I had done. With the aid of a broom, which I used as a crutch, I was able to get upstairs to the telephone to summon assistance. I was removed by ambulance to hospital, where the leg was laid between sandbags for the night.

February 5.—Radiographs showed a comminuted fracture of the neck and lower part of the head of the femur, with coxa vara and external rotation. Thomas's splint and adhesive plaster extension with 14 lb. weight were applied.

February 11.—Under a general anaesthetic two separate attempts at reduction by the Whitman method controlled by *x* rays were made. A Böhler type of Whitman plaster was then applied, extending from the axillae to the toes. An accidental injury to my right axillary nerve during the operation caused paralysis of the deltoid, which did not recover for some weeks. Because of this, my experience of plaster was perhaps less agreeable than it might otherwise have been, as I was rendered completely helpless except for the ability to use my tongue and my left arm. Further *x*-ray examination revealed incomplete reduction and persistent external rotation; then the plaster broke.

February 17.—A new plaster was applied, on this occasion without the use of anaesthesia. Owing to an accident with the *x*-ray plant the fracture was further displaced. The plaster set well, but the position, as shown by subsequent *x*-rays, was too bad to be left. As I had had enough of plaster by this time, and as my advisers were doubtful if union would take place by continuing on these lines, it was thought advisable to have the femur "pinned" in spite of the badly comminuted nature of the fracture and the difficulty in obtaining proper reduction.

February 24.—On this date I was transferred to an L.C.C. hospital.

February 25.—The plaster was removed, radiographs were taken, and the position of the fracture was found to be unsatisfactory. A Kirschner wire was inserted through the tuberosity of the tibia and 16 lb. weight extension applied.

February 28.—Further *x*-ray examination showed the position to be still unsatisfactory; the weight extension was increased to 24 lb.

March 4.—Operation was undertaken under general anaesthesia. *X*-ray examination revealed that the coxa vara was reduced, but the lateral views showed that the marked external rotation persisted unchanged; this could not be corrected by manipulation in spite of several attempts. It was decided to insert the pin with the position as it was, a course with which I would have been in entire agreement. The pin was therefore inserted by a modification of the method described by Hey Groves.

March 13.—The stitches were removed, and a haematoma which had formed under the scar was evacuated; the wound healed in a few days.

March 23.—I got up in a chair.

March 25.—On this day, exactly three weeks after the operation, I started walking with crutches.

April 1.—I was discharged from the hospital and went home. I could bear weight on the leg, though this was painful; a full range of movement was present at the knee and practically a full range at the hip, although the whole musculature of the limb was very wasted owing to the previous extension and immobilization in plaster.

Pridie (1938) suggests that the present is not the best time for discussing the relative merits of this operation as compared with other methods of treatment, but in the meantime those of us who have to treat fractures are still obliged to make up our minds as to which is the best method to adopt. This being so I think that a few observations on the various alternatives "from the patient's point of view" might be of value.

Sandbags

Sandbags are generally used as a temporary measure only; the fracture is in no way immobilized, and any movement—especially those necessary in the nursing of the patient—is most painful. I think in all cases some form of extension, however simple, should be instituted as soon as the patient is in bed. I am convinced that pain and shock are minimized by doing this. The old idea of leaving things alone for twenty-four hours or so has nothing whatever to recommend it from the patient's, or any other, point of view.

Weight Extension

As soon as adequate weight extension has been applied, practically all pain at the site of the fracture is abolished—in really most dramatic fashion. Provided the weight is kept on, moving about in bed is not painful so long as the fracture is kept distracted. Adhesive plaster extension, if the plaster extends high enough, is not unduly uncomfortable, but it has the disadvantage of immobilizing the knee, and also the extension has to be carefully adjusted to prevent discomfort round the ankle. Pulling the plaster off completely depilates a hairy leg and leaves the skin sore for quite a long time. Extension by Kirschner wire through the tuberosity of the tibia on the whole is less uncomfortable. It allows some movement of the knee, although a heavy weight—24 lb.—begins to stretch the knee-joint unduly and render it stiff and painful and subsequently weak.

I found that the insertion of the wire under local anaesthesia was extremely painful, particularly while the point of the wire was boring through the bone, which is not reached by the local anaesthetic. If the wire is not in the true transverse axis to the line of pull it tends to slip, and the necessary "pulling it back again" is also painful. In practice I have found that a Steinmann's pin is far less uncomfortable for the patient than a wire, and for this reason I prefer it. Another point is that a pin inserted above the knee is preferable and no more liable to give rise to trouble than one below the knee, provided proper care be taken and the extension is not left on for too long a period. In my experience it is best to manipulate the leg into position and put in a Steinmann's pin under a short N_2O anaesthesia in bed. The two ends of the pin are tied by cords attached to Whitchurch Howell's screw collars to the end of the splint, through which traction is applied to the whole limb.

Plaster-of-Paris

Although one constantly puts patients into plaster, and most of us show very little sympathy with their complaints, a surgeon, unless he has tried it, cannot possibly know what the patient has to put up with when a large part of his body has been immobilized in this way. I had practically unpadded Whitman plasters, with the leg in the fullest abduction possible, the plaster extending from the toes and enclosing the whole chest up to the axillae, an opening being left over the abdomen for respiratory purposes. Such a plaster renders one absolutely helpless except for the arms. It allows of no degree of spinal flexion and practically everything has to be done for one by nurses, which entails constant attention if life is to remain at all endurable. Of course one has to remain in the same position on the back continually, to sleep or lie awake. After the plaster has been applied only the patient realizes that it takes about three days to dry, during which time it is very cold, in spite of hot-water bottles, etc. Owing to this and the enforced immobilization the limb becomes quite cold and numb, which must have a very bad effect on old and bronchitic patients. Any irregularities on the inner surface of the plaster, especially round the foot, become a constant source of irritation and annoyance. Such minor lapses in technique as filling the patient's umbilicus with plaster or leaving his cold and rather sensitive toes embedded in plaster are all very real discomforts, which become far more intolerable in time than even a moderate degree of straightforward pain.

So far as I was concerned, the prospect of being left in plaster for anything from three to six months, or possibly even longer, was almost unbearable. I suppose one "becomes used to it," but I have found that most of my patients take the same view, and having once tried it would submit to almost anything rather than the discomfort of a big hip plaster. There are also, of course, important economic considerations. A patient in such a plaster is very nearly helpless, and requires assistance even with his bodily functions, to say nothing of keeping his body clean; he can do very little for himself whether his position is horizontal or vertical—the only two alternatives—and few of these patients are out of plaster in less than six months. Several of my cases, which have done well, have not been entirely free from plaster for ten to twelve months. Another grave disadvantage of immobilization in plaster is that all the other joints which are immobilized become very stiff. Even after the short period I spent in plaster recovery of mobility in the ankle and knee was slow and painful. After prolonged immobilization it may be months before recovery takes place, and in most of the older patients a full range of movement, particularly at the knee, is never restored at all. The muscles waste rapidly at the same time, and recovery (again even in my own case) is quite a lengthy proceeding, while the skin gets into very bad condition under the plaster, and is liable to persistent irritation. The prevention of sores at the edges of the plaster is also a very real difficulty. All these discomforts and disadvantages are done away with by the employment of operative fixation.

Radiologically Controlled Nailing

In my case a good deal of manipulation was necessary, the operation was moderately severe and prolonged, and I lost those advantages gained by operating within a few days of sustaining the injury. Except for a certain amount of soreness at the site of incision and some pain in the hip for the first few days I was very comfortable. After a day or two I could move the hip and knee, and in about ten days had managed to regain full movement of the knee, which had been quite stiff to start with. I found resting the leg on a Braun's splint was uncomfortable, and therefore discarded the splint in favour of a pillow under the knee after the first day. At first the most comfortable position in which to sleep was on the back with the knees drawn up at an angle of 45 degrees; it was four weeks before I could sleep on one side or the other.

Four weeks after the operation, when I went home, I could walk well on crutches, reach any part of my body, bath and dress myself without help, lace my own shoes, sit in any chair with comfort, and drive my own car. Eleven weeks after the accident and seven weeks since the insertion of the pin I was doing my surgical work, which includes attending out-patient clinics, going round the wards, and performing operations. Twelve weeks from the operation I climbed the North Cape (900 feet) while on holiday in Norway, and four months from the operation I am quite normal and can walk as far as I could before, although I cannot run yet. I have a full range of movement and no pain, and recent skiagrams show the pin to be unchanged in position and good bony union to be taking place.

Most of the arguments for and against the operative treatment of fracture of the neck of the femur centre round the question of ultimate union. The argument most commonly advanced in favour of operation is that union is more likely to occur in a fracture in which it is notoriously difficult to obtain union. Exponents of the more conservative methods cite those cases in which the fracture has been "nailed" and has "gone wrong," complications, such as aseptic necrosis of the head leading to non-union, or cutting out, loosening, or working out of the pin, arising soon, or as late as three years, after the operation. I have seen examples of all these complications, although I have yet to see a pin break, as 8 per cent. of Mr. Eric Lloyd's (1938) appear to do. I should have thought that no properly made pin of good quality steel should break. I believe some of these complications are due to faulty operative technique, but I have also had a number of patients treated by conservative methods—Whitman plaster or extension—in whom non-union and other complications have occurred. It is not my purpose, however, to argue as to which method is most likely to

result in union, for nobody can say that for certain at present; but I wish to put in a strong plea in favour of operation on account of the greatly increased comfort and well-being of the patient, the fact that other joints are not immobilized more or less permanently, and the great saving of time in "getting the patient about." So anxious am I to dispense with prolonged immobilization in plaster that, in the last two cases in which I have carried out arthrodesis of the hip, after intra-articular excision of the joint, I have fixed it at once by driving a long tri-flanged nail into the acetabulum. This procedure has been most successful: the operation is much quicker and less severe than the standard method, and the patients are up and free from plaster in two or three weeks instead of three or four months.

Some Comments

My personal experience of operative methods has been limited to a few cases, and the results have been encouraging, but until now my routine method of treatment, in patients fit to stand it, has been the Whitman plaster. From what I have heard and seen of other people's results, added to my own experience, I am convinced that the results obtained by the radiologically controlled operation, provided it is carried out properly and the pin is correctly placed, are at least as good as, if not better than, those obtained by the older methods. Admittedly, the operation and especially the all-important radiological part of it are difficult until the "team" has attained the necessary proficiency, but to my mind the enormous advantages from the patient's point of view outweigh the possible disadvantages. I regard this as one of the greatest advances of modern surgery, and in old patients I believe it to be a life-saving operation in many cases. As to the chances that the presence of a metal pin in the bone may lead to delayed union, I think this factor is more than counterbalanced by the adequate fixation of the fragments obtained, for even an unpadded Whitman plaster does not procure complete immobilization, as I easily proved for myself. When the pin has done its work and the fracture is soundly united I believe that it should be removed —a trivial operation which should be a routine in all cases.

To minimize difficulties and risks only tends to discredit any method of treatment, however good, and such statements as ". . . the operation can be completed in fifteen minutes," or ". . . one antero-posterior *x*-ray will suffice," are either untrue or mean that the operation has not been carried out properly, and that the unnecessary risk of a badly placed pin has been taken. Even in the hands of a team of experts the whole procedure with the necessary radiological control is unlikely to take much under the hour, and I find on inquiry at Sven Johansson's clinic in Gothenburg that their experience is the same in this respect.

With regard to primary osteotomy, as advocated by McMurray (1938), I cannot see the object of virtually assuming that non-union is likely to occur until at least some attempt has been made to obtain union by the ordinary methods. The Lorenz operation and intertrochanteric osteotomy give very good results in ununited fractures of the femoral neck, but why should it be necessary to do an operation of this type, which will give a poorer hip-joint functionally, before attempting to obtain union by direct fixation of the fragments? It seems to me to be a counsel of despair. Another point is that McMurray's operation entails prolonged immobilization in plaster, with all its disadvantages, whereas the insertion of the Smith-Petersen pin does not. If the nailing operation fails, then it is time to consider an osteotomy and fixation in plaster.

Conclusion

My personal and professional experiences have firmly convinced me that the radiologically controlled Smith-Petersen operation is the method of choice. If my femoral head aseptically necroses, or the fracture has failed to unite, or the pin drops out, I should still think that the result might have been as bad if I had remained in plaster, and only then should I consider the advisability of osteotomy. I respectfully disagree with Mr. Eric Lloyd (1938), and believe that all fractures which can possibly be nailed—even "lateral fractures"—should be, provided the surgeon is competent to do it properly. Personally I have now had the opportunity of receiving instruction from masters in the method; and having with me the most convincing argument of all—my own hip-joint—I shall not put another patient with a fracture of the neck of the femur into a Whitman plaster, valuable though the method has proved in the past, unless I am forced to do so. I believe that any patient who is fit to stand treatment by plaster is also fit to undergo this operation.

I should like to take this opportunity of expressing my great appreciation of all the care, kindness, and skill with which I have been treated by each of the three surgeons, two of them old "chiefs" of mine, who undertook my case. I am afraid I was a very troublesome patient, but the experience has taught me a lot. This article was written at their suggestion, and nothing I have said in it is intended to be in any way a criticism of their skill or judgment, for which I have the highest possible regard.

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THE BRITISH ASSOCIATION AT CAMBRIDGE

The main aim of the British Association for the Advancement of Science, which has just held its annual meeting at Cambridge, was described by Mr. H. G. WELLS as the consideration of science in a changing world. Lord RAYLEIGH, in his presidential address on vision in nature and vision aided by science, showed how the newly devised aids to vision had revealed new aspects of the material world which to the unaided senses appeared almost paradoxical; although such modern scientific doctrine appeared to have an elusive and even metaphysical character, it had revealed tangible facts by methods akin to direct scrutiny, and it remained true in a rather extended sense that seeing was still believing. More than on other previous similar occasions the relations of scientific activities to the everyday facts of life in the world were indicated. Lord Rayleigh took occasion to dissent from the older view that advances in science were aetiologically concerned with increasing animosities in mankind; and in the Geography Section its president, Professor GRIFFITH TAYLOR, suggested that racial prejudice might well be considered to be only another term for ethnographical ignorance.

In the Psychology Section Dr. WILLIAM BROWN dealt strikingly with problems of the mature personality, a new departure for some of his audience, again illustrating the benevolent contributions of science to a far from stable world. In the same section Mr. J. G. W. DAVIES defined the satisfactory state of vocational adjustment as being one in which a person could find in his occupation a sufficient outlet for his abilities, interests, and disposition characteristics, feeling at the same time that he was comparing adequately with his competitors in efficiency, and knowing that within the terms of his expectations he was holding his own as an economic unit.

Some Physical Problems

In a symposium on nuclear physics Professor NEILS BOHR of Copenhagen, who had formerly collaborated with the late Lord Rutherford, brought out the fundamental differences between the conceptions which had evolved

from the quantum theory of the atomic nucleus and those which were derivable on the basis of classical mechanics; there was a great facility of energy exchange between the nuclear particles, and a new particle, the "yukon," so named from its discoverer, Yukowa, was intermediate in mass between the proton and electron. Later in the symposium two transmutations were discussed—namely, that of carbon to radio-active nitrogen, and also of fluorine to neon. Current teaching about the chemistry of gold was criticized by Professor CHARLES GIBSON, who also demonstrated chemical methods of making gold films for industrial and decorative purposes. Dr. C. G. DARWIN'S presidential address in the Section of Mathematical and Physical Sciences dealt with logic and probability in physics. He maintained that the old formal logic was designed for a world which was supposed to have hard outlines, whereas the new mechanics had shown that the outlines were not hard, and that the method of reasoning must be altered accordingly. The subject of probability ought to play a much greater part in the education of the physicist as well as of the ordinary layman. For instance, the monthly variations in the Transport Ministry's monthly reports on road accidents were probably mere natural fluctuations due to chance.

Visual Perception

In the Section of Psychology Dr. R. H. THOULESS delivered a presidential address on the eye and brain as factors in visual projection, pointing out that visual perception was not only a sensory affair, and that the "phenomenal regression towards reality" differed in different persons and at different ages, the same scene, such as gaps in road traffic, being seen in various ways. Those persons who had been taught to trust the evidence of their own senses became cross when challenged by others. A person of "high phenomenal regression" could drive a motor car more easily through traffic than could one with low regression, seeing a gap in traffic at something near to its actual size before he reached it. Alcohol decreased phenomenal regression, while caffeine increased it. The common persistent tendency to drive on the crown of the road characterized persons of low phenomenal regression, but an understanding by the driver of the cause of his fault would help him to correct it. Sir ARTHUR KEITH contributed to a symposium on the Swanscombe find in the Section of Anthropology. Mr. JOHN SARGENT expressed the belief that the minimum size of any local government unit should be an area with a population of 250,000; this was followed by a two-day discussion of education for a changing society, in which great differences of opinion as to policy and procedure were expressed.

Social Relations of Science

The general committee of the British Association discussed a proposal to create a new division to deal with the social and international relations of science. A committee appointed annually would furnish material for the information of the public; would act in a consultative manner and establish relations with organizations and persons engaged in practical administration; would set up subcommittees for executive purposes or for research, inquiry, or co-ordination; and would maintain close relations with the sections of the Association, inviting their advice and receiving from them suggestions of subjects for discussion. This committee would meet regularly through the year at intervals determined by itself.

Since 1913 the number of doctors in Belgium has risen from 4,426 (one doctor to every 1,726 inhabitants) to 6,311 in 1935 (one doctor to 1,315 inhabitants). In the province of Brabant in 1913 there was one doctor to every 1,107 inhabitants, and in 1935, when Brabant had a population of one and three-quarter million inhabitants, one to every 938.

Local News

INDIA

Countess of Dufferin's Fund

It is announced in the annual report for 1937 of the National Association for Supplying Medical Aid by Women to the Women of India (Countess of Dufferin's Fund, including the Women's Medical Service) that in that year there was a definite expansion of the work of the association, two new branches of the Fund having been initiated, one in the new Province of Orissa and the other in the Province of Sind. In both these Provinces medical aid to women is still in a backward state, but it is hoped that the two new branches will supply the much-needed stimulus. The United Kingdom branch of the Fund has been closed in view of the great reduction in its work during recent years. Accommodation has been found in London, in the office of the High Commissioner at India House, for arrangements for the education in the United Kingdom of undergraduate medical women and for the recruitment of English women graduates for service in India, as well as for the reception and assistance of members of the Women's Medical Service and of Dufferin scholars in the United Kingdom. In April, 1937, the Government of India undertook the full financial responsibility for the maternity and child welfare section of the India Institute of Hygiene and Public Health, Calcutta. The rebuilding of the Dufferin Hospital, Calcutta, proceeded as rapidly as could be expected during the year under review, massive foundations having to be laid on the marshy soil of Calcutta and steel having to be procured; the work in the old building has been handicapped meanwhile, two wards having necessarily to be closed to patients, while the theatre was put out of action for operative work. The number of new admissions consequently fell, but there was an increase to 1,121 in the number of maternity cases delivered, as well as in the number of out-patients. The new dental department has been opened. A preliminary training school for nurses was held three times in 1937 for periods of two months, and proved to be most popular and valuable. Investigations were continued into the anaemia of pregnancy, of which there seems to be an increasing number of admissions each year, the patients being almost *in extremis* and often with many complications. There is still no money available for equipping the new building, and a new nurses' home is urgently needed. At present one-third of the hospital's expenditure is met by payments from patients, and it is hoped that with further accommodation, including additional private rooms, the income from this source will grow proportionately. The hospital will eventually be a first-class medical and surgical treatment centre for women and children, a modern training school for nurses, a post-graduate training centre for medical women, and a research centre. The new hospitals of the Fund at Shillong and Khamgaon are progressing excellently, and are proving most valuable in their respective districts. It is insisted in the report of the Fund that the great need in India to-day is for a better educated and better trained nursing service; this can only evolve when more suitable conditions for training will attract to the nursing profession Indian girls of better class who will enter it with a vocation for nursing and with ideals of service. The executive committee of the Dufferin Fund has consequently earmarked the unspent balance of the Silver Jubilee Fund, amounting to over 71,000 rupees, for grants for rebuilding and improving nurses' quarters, for increasing teaching equipment in training schools for nurses, and for providing teaching allowances for sister tutors and salaries for additional staff nurses. It is also proposed to award scholarships to trained nurses to enable them to take courses in administration in large hospitals so as to fit them for administrative posts. Regret is expressed at the

poor financial support given to women's hospitals in India by the local authorities, and it is noted that, while the number of women and children availing themselves of treatment increases steadily, the financial support of the public is diminishing. In most of the hospitals there is serious overcrowding, which is yearly becoming more acute, and the continuance of the work is threatened. An inquiry into maternal mortality and morbidity in childbirth is proceeding in Calcutta under the Women's Medical Service and the Indian Research Fund Association. The Lady Hardinge Medical College, New Delhi, receives an annual grant from the Government of India, smaller grants from Provincial Governments and some Indian States, as well as fees from students and some patients.

Plague in Bombay

An abnormally low mortality from plague was an outstanding feature of the health of Bombay in 1936, and in the seventy-third annual report of the Director of Public Health for the Government of Bombay Lieutenant-Colonel A. Y. Dabholkar, I.M.S., quotes the annual statistics since 1914 to support his contention that, although there are occasional epidemic waves, there has been a progressive decline in incidence. The peaks reached by epidemics during recent years are low compared with those in earlier ones, and it is suggested that the anti-plague measures, including calcium cyanide fumigation, which are being organized by the Government and by local authorities in the epidemic centres have materially influenced the trend of these epidemics. It is even hoped that the application of more systematic and sustained measures will result in the complete eradication of this disease. Ratting operations involving the use of fumigation were undertaken in various areas, including Bombay City, but the warning is given that the decline in the incidence of plague must not be taken as an excuse for not continuing and intensifying this work until the rat population has been reduced to a minimum, in spite of the natural tendency to increase of this pest. The mere use of traps and baits is inadequate to this end, and demonstration cyanogas operations have been conducted in several districts under Government control, additional subordinate medical officers and staffs being appointed for this purpose. There was a regrettable decline in the number of inoculations, but the vaccine used in the Presidency proved very satisfactory. In one district which had 677 plague patients only seventy-one had been inoculated, the case percentage mortality being 43, while among the 606 uninoculated cases the death rate was 57 per cent. No special medical officers were required for plague inoculation duty. Colonel Dabholkar is satisfied that the employment of hydrogen cyanide in one or other of its various forms can now be recommended for use with complete confidence, and can well replace the other less efficient methods of disinfestation. In 1936 the plague mortality in the Presidency was the lowest ever recorded since 1896, the year in which plague first appeared there. Of the 4,320 deaths from small-pox, 1,176 involved infants under the age of 12 months, and 71 per cent. of the deaths occurred in children. These figures emphasize the need for a more thorough application of vaccination among the population in this susceptible age period. Thus, in Bombay, two of the most fatal diseases in India appear to be capable of control. Various sanitary associations are pushing on energetically with the work of health propaganda; lantern lectures, demonstrations, and local exhibitions being very popular and facilitating the introduction of sanitary measures for villages. The position is less happy in respect of diseases of the respiratory system. Deaths from pulmonary tuberculosis have been steadily increasing in recent years, and Colonel Dabholkar remarks that the importance of early diagnosis and notification, which are the first line of attack, has not yet been fully realized, nor has the pressure of public opinion been brought to bear on the local authorities to make them pay sufficient attention to this menace, which is obviously increasing.

NEW ZEALAND

[FROM OUR CORRESPONDENT IN WELLINGTON]

The Cost of Social Services

The payment of old age pensions began in New Zealand in 1899. In the succeeding thirty-eight years the population doubled, but the number of pensions has been multiplied by nine. If plans now in view are adopted the cost of pensions will double again. It has grown from £157,000 to over seven and three-quarter million pounds. The causes of this huge increase are many. Immigration and the birth rate have declined; the cost of living has progressively increased; qualification for pensions has been eased; war pensions have been necessary; and there is an ever-widening demand for pensions. It is not surprising, therefore, that taxation has increased during the last three years by about 50 per cent. There is a distinct tendency to encourage dependence on the State, and thrift, effort, and enterprise must be taxed to support such people as are unprofitable. New Zealand is now at a peak of prosperity and may be able to afford the cost of "social security," as it is called, but if the value of exports decreases unproductive expenditure may be the first to be curtailed.

National Health Scheme

An outline of the Government's proposed national health service has been supplied by the parliamentary chairman of the National Health Insurance Committee and may be accepted as a correct summary of the National Health Insurance Bill to be introduced shortly. The scheme will not be put into practice before April 1, 1939, and in the meantime a General Election will be held; the Opposition may succeed at the election, and this may lead to an amendment of the legislation. Mr. Nordmeyer, chairman of the committee, said that the real wealth of the community lay in its men and women, boys and girls; anything which tended to increase their health and well-being tended to increase the community's wealth. Many countries had discovered the value of health insurance, by means of which medical costs could be spread more or less equitably throughout the community and more or less equally throughout the individual's life. Medical costs fell so heavily and so uncertainly that they could not be met by the average individual. The middle class suffered most severely; the poor, of necessity, were usually treated free, but those who were regarded as able to pay were expected to pay, often at the cost of real hardship over a number of years. When the British health insurance scheme was instituted the doctors almost unanimously opposed it, announcing that they would not co-operate; Mr. Lloyd George, however, went on with his scheme, and it was now a huge success, and the doctors themselves were asking for its extension. Mr. Nordmeyer went on to deal specifically with the social security proposals, of which, he said, health insurance was an important part.

It was proposed, he continued, to institute a general practitioner service free to all. The names of the doctors willing to work under the scheme would be published, and people would be free to choose their own doctor and to change him at the end of three months if they wished. The Government realized that the doctors must be adequately paid for their services, and £1,200,000 had been set aside for that purpose; that sum was greater than the sum doctors were at present receiving in the aggregate. There was also to be a free hospital service. Hospital boards were to be paid 6s. a day for each patient. The average amount at present collected daily for each bed was 2s. 8d., only a small fraction of the actual cost. Hospital boards would thus save £400,000 a year; they would also save £40,000 on confinement cases, for which a special payment was to be made; £100,000 on charitable aid as the result of new and increased pensions; and £10,000 on administration expenses. The whole saving of £550,000 would reduce local body levies by £275,000

and hospital rates by about one-third. This saving would be largely cancelled out by increased building, but the building would have to be gone on with in any case.

After outlining other proposals, Mr. Nordmeyer referred to the cost: "Some say that we can't find the money, but if there were a war to-morrow we would have no trouble in finding the money." Of the total cost, £7,575,000 would come from the tax of 1s. in the £ on wages and income, and the 5s. quarterly levy, and £7,095,000 was already being contributed from the Consolidated Fund; that left £3,150,000 to be found.

It would appear that Mr. Nordmeyer is basing his estimate of cost on the original proposals. These, however, have been expanded, and the cost of the full plan will be much more, in the opinion of the actuary sent out from Great Britain to advise on questions of finance.

July 30, 1938.

ENGLAND AND WALES

Nursing Inquiry: Views of London Hospitals

The Voluntary Hospitals Committee for the County of London, which functions as the London Regional Committee of the British Hospitals Association, has prepared a statement of evidence for submission to the Interdepartmental Committee on Nursing. The statement is based on observations forthcoming from the London voluntary hospitals. With regard to one of the principal difficulties in recruitment—namely, the fact that nurses cannot begin their training until the age of 18 or 19, whereas they have left the secondary schools at 16—the committee holds that any lowering of the age is undesirable, but suggests that hospitals should register candidates on leaving school, with the object of keeping in touch with and advising them as to appropriate occupations in the interval. Such registration might be made at one general office for all hospitals in a region and extended to include the registration of all applicants to individual hospitals so that those not accepted by the hospital to which they originally applied might be taken by another. Such a bureau might further be available for inquiries as to qualifications and facilities for the establishment of effective regular contact between hospitals and education authorities, and to act as a public relations department in respect of nursing in voluntary hospitals. Other suggestions are that the General Nursing Council should encourage affiliation of special with general hospitals for the purposes of nursing training, and that the syllabus should be rearranged so that candidates may take Part I of the Preliminary State Examination before joining the hospital and proceed to the hospital wards equipped for their practical clinical training. The hospitals are fairly unanimous in favour of the retention of hospital examinations, which serve a useful purpose in grading the nurses, and the view is that they cause no hardship if taken just before the Final State Examination.

Turning to conditions of service, the statement of evidence declares that accommodation for nurses in London is generally good. So far as restrictions are concerned—a real or fancied deterrent to recruiting—it is considered by the committee tendering evidence that there is need for close and detailed comparisons of hospitals in this respect, with a view to the general adoption by all of them of the maximum measure of freedom which experience at one hospital has shown can be safely granted. Experiments in living-out should be encouraged in appropriate cases—for example, in the case of probationers whose homes are within easy distance of the hospital. The recommendations of the College of Nursing for a 96-hour fortnight and specified rates of pay are generally regarded by the voluntary hospitals of London as the ideal towards which each hospital should approximate as nearly as its resources permit. In one hospital (South London Hospital for Women) the 96-hour fortnight has been established, not by increasing the nursing staff but by the employment of non-resident female ward orderlies who relieve the nurses of domestic tasks. If the recommendations of the College of Nursing were carried out in London the increased maintenance cost would amount to about £150,000 per annum, and the Voluntary Hospitals Committee does not see how expenditure of that order could be incurred without some form of assistance from the State. If the standards proposed by the College are adopted, it is considered essential that the hospitals should be provided with grants of comparable size, and that such grants would be least likely to interfere with voluntary support generally if they were given in recognition of the services rendered by the hospitals in the training of nurses.

Other bodies which have prepared evidence for the Interdepartmental Committee include the General Nursing Council, the British Medical Association (see Supplementary Report of Council, *Supplement*, June 18), the London County Council, the Women's Employment Bureau, and the Student Nurses' Association.

Red Cross Rheumatism Clinic

The eighth annual report of the British Red Cross Society's Clinic for Rheumatism, covering the year 1937, stresses the urgent need for more accommodation. So heavy was the demand for treatment that during two periods of the year no new women patients could be admitted. In the general department attendances numbered 90,884, and treatments 134,184; in the private patients' department the respective figures were 7,949 and 11,408. The report points out the importance of early treatment in cases of rheumatism. For this reason four evening clinics are held each week, and sufferers from early manifestations of rheumatism are thus able to attend for consultations and treatment without absenting themselves from their daily work. It is stated that these evening clinics are extremely popular and well attended. Innovations during the year include the provision of plaster splints, which the patients can slip on and off themselves as required, and the weekly attendance of a chiropodist. With regard to footwear it is stated that too short stockings and socks appear to be an even more fruitful cause of foot trouble than incorrect shoes. Often the patient is found to be wearing stockings several sizes too small. This is especially the case among poorer patients, for in the cheaper types of stocking the thread is overstretched, so that wetting produces much shrinkage. The report records a considerably increased financial deficit, and states that larger resources are required if the work is to be carried on on the present scale.

Port Hygiene at Liverpool

The annual report for 1937 of the Port Health Authority, Liverpool, describes the outbreak of paratyphoid fever, with a concurrent smaller outbreak of Sonne dysentery, which affected a closed community, the boys in a Mersey training ship, during the months of September, October, and November. The first case of illness was a new boy, shown to be a urinary carrier of *B. paratyphoid* B. Out of a total complement of 128, eleven boys were definitely paratyphoid, while four more were doubtful. In addition, five cases of dysentery were admitted to hospital. Routine examination of faeces revealed a Sonne dysentery carrier as a possible cause of origin. One of the cases of dysentery was discharged from hospital on September 28, to be readmitted five days later with paratyphoid fever; it would appear that while suffering from the former he had been incubating the latter disease. During the year under review 161 cases of infectious sickness were landed from ships. A cruising vessel which arrived at Liverpool in September reported that four passengers and one officer were suffering from dysentery. Several members of the crew fell ill during the next four days, besides one passenger who was staying at a local hotel. All

the patients were removed to hospital, where, with the exception of one passenger who died, they made a satisfactory recovery. The vessel had taken on board fruit, vegetables, and live crayfish at Casa Blanca; fruit, vegetables, and a hundred tons of water at Madeira. This water was mixed with the water originally taken in at Liverpool, and, although no organisms of the dysentery group were discovered, the bacterial count proved unusually high. It seemed probable, therefore, that this water was connected with the outbreak. The tanks were cement-washed, and no further cases occurred during the vessel's subsequent voyage. With regard to the hygiene of crews' spaces the Medical Officer of Health deplores the large number of quarters infested by bugs and the apathetic attitude too often adopted concerning this problem. Strong disciplinary measures and constant propaganda on the necessity for personal cleanliness are advocated, in addition to more thorough methods of disinfestation. "It is less difficult to keep bugs out of crews' quarters than to kill the insects once introduced."

The Ross Institute

Mr. A. Chester Beatty, chairman of the Consolidated African Selection Trust, has accepted the vice-chairmanship of the Ross Institute of Tropical Hygiene, London School of Hygiene and Tropical Medicine, in succession to the late Sir Harcourt Butler. Dr. A. J. R. O'Brien has accepted membership of the Ross Institute Standing Committee in succession to the late Sir Thomas Stanton. Dr. G. Macdonald, at present medical officer in charge of the Ross Institute Branch in Ceylon, which is administered by a committee of the Ceylon Estates Proprietary Association, has been appointed assistant director of the Ross Institute, and will return to London from Ceylon at the end of the year to assist Sir Malcolm Watson. Dr. Robert Svensson, who has recently toured East and West Africa on behalf of the Institute, has been appointed assistant director, and will take up the appointment of medical officer of the Ceylon Branch in succession to Dr. Macdonald. Dr. J. W. Foster has been appointed assistant director, and will take charge of a new branch in the Gold Coast at the end of the year. The Branch is being financed by a group of mining companies. Before taking up their appointments Dr. Svensson and Dr. Foster are making a tour of the East, during which they will see the malaria control work and the health organizations in the planting and mining districts.

London County Council Hospital Services

The London County Council has decided to provide a portable *x*-ray unit at seven of its acute infectious diseases hospitals. A full-time position of radiographer is to be added to the fixed establishment of staff for allocation for one session a week to each of the hospitals. One infectious diseases hospital is already served to the extent of one visit a week by a full-time radiologist. This arrangement will be continued, but at each of the remaining hospitals it is considered that fortnightly visits will suffice. The services of a consulting radiologist will therefore be needed for a total of four sessions a week. The rate of remuneration will be £350 a year, or, if he is already employed as a part-time consultant or specialist in the hospitals service, £300 a year, with additional payment of two and a half guineas for each emergency visit in excess of the number of routine visits. A new children's block, comprising wards for thirty children and an out-patient department, will shortly be ready for occupation at Maudsley Hospital. The opening of the wards for the reception of in-patients will be deferred for a time, but the out-patient department will be brought into use as soon as the accommodation for it is ready. As an experiment, whole-time dental surgeons have been employed in recent months at two L.C.C. general hospitals, and, the success of the scheme justifying the experiment, it is proposed to extend it to two other general hospitals. Provision is also to be made for an increase in the number of dental sessions at two special hospitals, and for two sessions a week to be provided at another special hospital where hitherto there has been no such provision at all. Of the tuberculous patients who received institutional treatment under the council's tuberculosis scheme, and were discharged in 1932, the number traceable being 3,374, it has been ascertained that after five years 42.1 per cent. of patients with the pulmonary form of the disease and 74.6 per cent. of patients with the non-pulmonary (surgical) form are still alive.

IRELAND

Medical Members of the Senate and the Dáil

The poll for the Eire Senate election closed in Dublin on August 17, and the complete results of the election are now available. Mr. H. L. Barniville, M.Ch., senior surgeon to the Mater Misericordiae Hospital, was elected for the National University of Ireland constituency, and Dr. Patrick J. Doyle of Offaly was elected on the cultural and educational panel of the Senate. The only other medical man elected is Dr. R. J. Rowlette, professor of materia medica in Trinity College, who was returned unopposed as one of the three senators for the Dublin University constituency. But in addition to the forty-nine elected members the Prime Minister, Mr. De Valera, nominates eleven others to make up the poll to sixty. For the previous Senate, which was elected six months ago, he nominated Dr. Robert Farnan, professor of obstetrics and gynaecology in University College, Dublin, and it is thought that he is likely to do so again on this occasion. In the Dáil Eireann, whose full membership is 138, there are the following members of the medical profession: Dr. James Ryan (Minister for Agriculture), Dr. Francis C. Ward (Parliamentary Secretary to the Minister for Local Government and Public Health), Dr. Joseph Hannigan, Dr. Francis Humphreys, Dr. Thomas F. O'Higgins, and Dr. Seán Tubridy.

The Rotunda Report

The report (1936–7) of the Rotunda Hospital, Dublin, records considerable progress in the reconstruction programme, despite the adverse effects of a six-months strike. Among the improvements noted by the Master, Dr. A. H. Davidson, are the enlargement of the main labour ward, permitting increased space for a gallery for students and graduates, and the provision of a room for newly born infants with eight special electrically heated cots. Attendances in the out-patient department reached the large figure of 26,372; in the pre-natal clinic 10,057, an increase of over 2,000 on the previous year. The report stresses the importance of the V.D. clinic owing to the reluctance of this type of patient to attend the venereal centres in the city. Thirty-three of the 224 Wassermann tests were positive, and thirty of the patients attended for anti-syphilitic treatment during pregnancy. As a result fifteen living infants were born, and these were treated with bisoxyl until 6 months old. There were 2,301 calls on the hospital district, and 1,944 women were delivered. Among this number were three maternal deaths and seventy stillbirths, twenty-six of the latter occurring in premature cases. In 265 cases the baby was born before the arrival of the students. There were two sets of triplets. Admissions to the maternity department totalled 3,212, deliveries 2,851. Of these deliveries 2,585 were normal vertex presentations, three transverse, and one brow; fifty persistent occipito-posterior presentations, and sixty cases of twin pregnancy; nineteen cases of prolapse of the cord, nineteen of placenta praevia, and ten of post-partum haemorrhage; three cases of rupture of the uterus, and fourteen of eclampsia. Hospital deliveries showed a morbidity rate of 3.68 per cent. The mortality rate was 0.45 per cent. in the hospital, while the total mortality rate, including external maternity, was 0.33 per cent.

Correspondence

Maternal Mortality Rates

SIR,—How misleading as to the true state of affairs isolated statistics can be is shown in the list of towns showing their respective maternal mortality rates for the year 1937, and mentioned by Dr. A. Massey in your issue of August 13 (p. 337).

In the town in which I am particularly interested the total births per annum are very much under one thousand, so that the figure given of 1.56 per 1,000 for maternal deaths from sepsis really means that one death happened to have occurred in that year. This was a case of an unmarried mentally defective woman in a generally most unsatisfactory condition. The rate in 1936 was *nil*.

In so small a number of births the total maternal mortality rate in any one year is also misleading, for one death makes such a difference in the figures. As a matter of fact, if the maternal mortality rate had been given over a number of years for this town it would have been about half the figure quoted. Had the year 1935 alone been taken, the total maternal mortality rate would have had to be quoted as "*Nil*"—also misleading as to the real mortality.—I am, etc.,

W. G. WILLOUGHBY,
Medical Officer of Health, County Borough of Eastbourne.

Eastbourne, August 22.

Hormone Therapy in Mastitis and Breast Cancer

SIR,—We have received numerous inquiries concerning certain statements which have been made in a letter by Dr. Alfred A. Loeser in your issue of August 6 (p. 319). One of these statements is as follows:

"So far as cancer of the breast is concerned, it is advisable to treat patients who have already undergone a radical operation prophylactically with high doses of male hormone every year. In my opinion this is a better method of avoiding a secondary deposition than irradiation, especially in families in whom cancer is hereditary. I have done this in two cases of breast cancer."

This opinion appears to be based on only two cases of breast cancer, and it is not stated how long they have been kept under observation. As it was only in 1936 that Miescher, Wettstein, and Tschopp first prepared testosterone propionate, and it is only comparatively recently that the substance has been available, the follow-up of these patients cannot have been for more than two years: there is no proof that a recurrence of the disease would have taken place within this period without any prophylactic treatment. It should not be necessary to draw attention to the elementary rule in clinical research that before a certain treatment can be said to prevent the recurrence of carcinoma it should be employed in a reasonable number of patients, with an adequate number of controls receiving either no treatment at all or some other form of treatment, such as irradiation, with which the therapy under trial is being compared, and that both groups be followed up for some years.

It is dogmatic statements such as the one cited above, founded on evidence that is extremely meagre or even non-existent, that will tend to bring British clinical endocrinology into disrepute.—We are, etc.,

A. W. SPENCE.
GEOFFREY KEYNES.

London, August 18.

The Prontosil Group in Br. abortus Infections

SIR,—I have read with great interest the article in your issue of August 13 (p. 342) by Dr. C. Z. Neumann on "The Treatment of Undulant Fever with Prontosil." The twenty cases which he there analyses appear to be all cases of *Brucella melitensis* infection, and it may therefore be of interest to your readers to know the results which have been obtained with prontosil and closely related substances in my series of *Brucella abortus* infections in England and Wales.

Such treatment has only recently become fashionable, and consequently there are only thirty-five cases so treated in my series. Prontosil itself was used alone in fifteen cases, in two of which it was reported to have had a good effect; in one case it gave doubtful benefit, in seven cases it gave no benefit, and in the remaining five cases the effect is not known. Prontosil soluble was used by itself in only one case, and in this case benefit was obtained. Sulphanilamide was used in seventeen cases—in ten with good effect, in three cases with doubtful effect, in one case no benefit was obtained, and in the remaining three cases the effect is not known. In one of these cases treated with sulphanilamide diarrhoea and vomiting followed the administration of the drug, and in another case intense cyanosis was reported. Prontosil soluble was used in conjunction with sulphanilamide in two cases, once with good effect and on the other occasion with none.

These results, though relating to a small number of cases, justify in my opinion the continued trial of substances of the prontosil group in the treatment of undulant fever.—I am, etc.,

W. DALRYMPLE-CHAMPNEYS.

Ministry of Health, Whitehall, S.W.1,
August 15.

Blood Groups and Legislation

SIR,—Dr. A. G. Newell, in his letter in the *Journal* of August 13 (p. 376), raises a number of important queries in connexion with blood groups and legislation, and suggests that the British Medical Association should make an authoritative statement on this question. There is no doubt that in due course they will be officially asked to do so, but in the interim some comment upon the present position is pertinent.

First, Dr. Newell asks whether the time has come for legislation. As a race we are notoriously apt to sit on the fence and watch the world pass by, a mode of life conducive to profiting by other people's mistakes, but with the concomitant disadvantage of being eternally behind in general progress. Used first in 1923, statistically proven in 1926, amplified in 1929, and proven over and over again since then, the blood-grouping test in disputed paternity passed England by until May of this year. The answer to Dr. Newell's first question is that the time has, in fact, almost passed. It is unnecessary to detail the various societies and bodies, both legal and medical, which have been approached and which are in accord as to the desirability of introducing legislation. Suffice it that the general consensus of authoritative opinion is that the time has come. With this knowledge the Association of Clinical Pathologists was approached, and set up a special committee which sat earlier this year to inquire into the technique of the test as it should be applied in medico-legal cases. The resolutions of that committee were placed before Lord Merthyr, who has incorporated them in the draft of the Bill which he is to introduce into the House of Lords next session, and which makes the performance of a test a necessary condition of the further hearing of a

case if it is asked for by either party or by the court itself. The remainder of Dr. Newell's first question is best answered from the findings of this committee and from the draft of the Bill.

He asks, pertinently, what system of grouping is to be recognized. There are, allowing for the subdivisions of the four main groups, eighteen possible blood groups which might be used, and which in fact, are used in the Scandinavian countries. The technique of the tests employed in differentiating the A_1 and A_2 subgroups is extremely specialized, and can only be fairly used in a laboratory with a full-time serological staff to which *all* the blood tests are sent (such as is the case in Copenhagen). This appears impracticable in England, and it is proposed to limit the test to the four main blood groups—O, A, B, and AB—together with their threefold subtypes—M, N, and MN—for the present. Moreover, the cell agglutinogens alone will be tested, thus obviating the difficulties which arise with possibly weak or immature agglutinins.

The rest of Dr. Newell's second question consists essentially of practically every red herring known to the study of blood groups, and although dogmatic statements are always undesirable, the herrings can only reasonably be caught with such hooks. Matta of Cairo proposed a new theory of blood-group inheritance (which was not accepted at the International Congress of Microbiology in 1936) to explain an AB father with an O child, this occurring in a relatively minute series of some ninety-odd families. The statistics of familial groupings are littered with AB fathers and O children, which, having regard to the axiomatic *pater semper incertus* of Roman law, have very properly been relegated to illegitimacy. One cannot accept father–child combinations as proof of any theory of heredity in man; it is only the mother–child combination which provides proof, and of all the thousands of AB mothers we have examined only one has ever had an O child (the Haselhorst case, which is susceptible of explanations other than that the theory of blood-group heredity is at fault), while no O woman has ever been found with an AB child. The same considerations apply to Bauer's theory of heredity.

The remainder of these red herrings may be dealt with more tersely. The implied criticism of the theory of heredity in the sentence: "Several parents of A_1 group were found who had given birth to O children . . ." is symptomatic of complete misunderstanding rather than intelligent criticism. There is no reason why an A_1 parent should not have an O child, and this is the first time, so far as I am aware, that such a suggestion has ever been made. In fact, the statistical odds are that such a parent *will* have an O child. For the rest, the fact that the so-called A_2 agglutinin agglutinates O cells is well known, but is in no way relevant to the performance of a blood-grouping test; the fact that the M and N agglutinogens are separate from the A and B substances both serologically and genetically, far from negativing their value, gives them their strength; and, lastly, the normal constituents of the red cells, the agglutinogens, *cannot* be present or absent according to the state of health or disease of a person, but are present or absent only according to the state of the germ cells of the parents who begat him. Moreover, these agglutinogens are present not only in the red cells but in all the body tissues, fluids, and secretions as well, the term "blood group" deriving from their method of discovery thirty-eight years ago.

Thirdly, Dr. Newell inquires after statistics stating that these are not generally agreed upon. "Not generally known" would be more correct, for the chances of exclusion of an innocent man vary only with the distribution of the groups among the relevant population, ranging in England from 1 in 12 in Group AMN to 2 in 3 in Group ABN, with an average of 1 in 3. It is unnecessary to quote the complete exclusion tables, for they are legion among the literature of blood groups.

The most important points of Dr. Newell's letter lie in his last three questions. First, what sera should be used? It is admitted, and is indeed obvious, that the crux of the test rests on the sera that are used, which must be at the same time entirely group-specific and yet potent enough to detect the weakest of agglutinogens. Moreover, the preparation of M and N antisera is notoriously difficult. To overcome this the present suggestion is to establish a central source of supply, *every* blood test in paternity cases being obligatorily made with serum from this source, the serum being supplied on the day of the test, and having been titrated, checked, and certified the day before. Given these sera the person making the test will simply read the results, having followed a standardized technique, and fill in a standard form of report, which will state that the test was made with a particular batch of serum certified by the central source.

The pathologists making the test would be recognized by the Lord Chancellor and placed upon a panel of approved persons. In this connexion the committee of the Association of Clinical Pathologists was emphatic in the view that only registered medical practitioners should be approved persons, and that the test should not be delegated to laboratory assistants. So far as the giving of evidence is concerned, it is, of course, essential that the report should be acceptable as evidence without the attendance of the pathologist at court, by which means the cost of the test is reduced and valuable time is saved. Attendance at court would only be necessary if it was specifically asked for by either of the parties. The proposed Bill makes the requisite provision for this, the precedent being found in the acceptability of a certificate of the analysis of milk under the Food and Drugs (Adulteration) Act.—I am, etc.,

London, W.1, August 19. JOHN C. THOMAS.

Rheumatoid Arthritis and Jaundice

SIR,—I have just read the very interesting paper by Dr. P. S. Hench in the *Journal* of August 20 (p. 394) on the effect of natural jaundice in alleviating symptoms of rheumatoid arthritis. May I, very humbly as befits one of the rank and file, suggest that the important factor may not be the presence of bile in the blood stream but rather its absence from the intestine, with all that this implies as to its cultural, chemical, and solvent activities? This view would appear to be a useful line of research for a combination of surgeon, bacteriologist, and biochemist.—I am, etc.,

Stoke Poges, August 21. W. L. PEACOCK, M.B., B.Ch., D.O.M.S.

Antagonistic Diseases

SIR,—Dr. Philip S. Hench's article, "Effect of Spontaneous Jaundice on Rheumatoid Arthritis" almost makes one believe that the cessation of symptoms which he describes may be yet another sign of a new era in therapeutics.

I myself was particularly interested since you were good enough on February 27, 1932, to publish a letter of

mine entitled "Antagonistic Diseases," in which I pointed out that the recovery of some chronic invalids when they contracted an additional complaint was not always necessarily a matter of coincidence, and that, if only sufficient data could be obtained, it would be found that there were far more of these accidental cures than one would have thought possible.

My letter was suggested by a questionary that had been circularized about the incidence of cancer. In it, I believe, we were asked to give fairly full details of the medical histories of our cancer patients. I hazarded that, with regard to treatment and prevention, much more practical results would be obtained from statistics stating what cancer patients had *not* suffered from, rather than the associated complaints.

Supposing for instance it were found that very few cancer patients had ever had diabetes, say, and that the converse was equally true; how pertinent that would be—what a pointer to additional research! Or, leaving cancer out of it, one might find that in the realm of diseases there were many likely combatants. Chicken-pox might be found to be antagonistic to poliomyelitis—who knows?—hyperthyroidism to disseminated sclerosis, and so on.

Of course I am not suggesting that we should necessarily infect the patient with a suitable antagonistic disease, because in some instances the cure would be worse than the complaint. But Nature is not so prodigal with her therapeutic clues that we can afford to despise any of them, however fantastic or unreliable.—I am, etc.,

Southsea, August 21. E. GRANGER.

Small-pox and Vaccination

SIR,—Regarding Dr. C. Killick Millard's letter in the *Journal* of July 16 (p. 151), in which he supposes that Dr. A. L. Craddock is entirely out of touch with the questions of aetiology and prophylaxis of small-pox, I should like to mention the following case.

In 1925, while acting as Staff Surgeon, Calcutta, I visited families under my care to ascertain the extent of protection from small-pox by vaccination in view of an outbreak of the disease. In one case the mother and three children were all unvaccinated. The mother stated that she did not believe in vaccination. On pointing out that she was of age and could judge for herself, but that the children should not be unduly exposed, she reasonably agreed to their being vaccinated. About two months later the poor woman suffered from a very severe attack of small-pox which nearly proved fatal. She had been a pretty woman, but after the attack she was very deeply pitted and all her beauty was lost. The children did not contract the disease.

Anyone who has experience of medical problems in India will have no doubt on the subject of adequate protection from small-pox by vaccination. I wonder if Dr. Killick Millard has read Dr. Victor Heiser's autobiography, in which he refers to small-pox in the Philippines? (I quote from memory.) Dr. Heiser was in charge of public health arrangements before self-government was given to the islands and compulsory vaccination was in force. When the Filipinos assumed government compulsory vaccination was abolished. Small-pox became rife, and Dr. Heiser was recalled to deal with the situation. He reintroduced compulsory vaccination, and he states that when he left there were no anti-vaccinators alive; they were all dead from small-pox.

In 1925 when on a voyage from Bombay to Marseilles on the P. and O. liner *Narkunda* I was called in consultation by the ship's surgeon to see a wireless officer who had fever and a suspicious rash. This proved to be a typical case of small-pox. The ship had been three days at Bombay and the patient was the only officer of the ship's staff who was unvaccinated. The incident caused the P. and O. Company much trouble as all passengers were held up for some five hours at Marseilles. I understand that the company now insist on all wireless officers being vaccinated as they do for their own staff.—I am, etc.,

Blackheath, August 18. A. D. STIRLING, Colonel.

SIR,—I hasten to assure Dr. Fred H. Judd (*Journal*, August 20, p. 426) that he has entirely misunderstood the purpose of my letter in the *Journal* of July 16, in which I took exception to a statement by Dr. A. L. Craddock that "there can be little reasonable doubt that the remarkable position [freedom of this country from fatal small-pox] is due largely to compulsory vaccination."

I am just as convinced as Dr. Judd himself is of the efficacy of (recent) vaccination in protecting the individual against small-pox, and I gave proof of this nearly forty years ago when I took my wife and two young children, all recently vaccinated, into our Leicester small-pox hospital, during an outbreak of variola major, and photographed them by the bedside of a confluent case of the disease. Nothing which I have experienced in fighting small-pox since that time has ever shaken my faith in vaccination, which is just as strong to-day as it was then. And had I to deal with small-pox in China, as Dr. Judd has done, I have no doubt I should make use of vaccination just as he does, and be just as thankful for it.

But all this does not in the least affect my position that it is not compulsory vaccination which deserves the credit for the virtual disappearance of major small-pox from this country. If anyone still believes that, I would beg of him to re-examine the whole question impartially and *de novo*, and I feel sure that he will have to modify his opinion. Nor do I wish to stress the word "compulsory"; I believe that general vaccination of the infant population, irrespective of compulsion, has had very little, if anything, to do with it, at any rate in this country.

Finally, to soothe Dr. Judd's feelings, may I say that I would always urge anyone going out to the Far East, or to any part of the world where variola major was endemic, to get vaccinated beforehand, and this whether he had been vaccinated in infancy or not.—I am, etc.,

Leicester, August 21. C. KILLICK MILLARD, Ex M.O.H. for Leicester.

Undescended Testicle

SIR,—I had hoped that someone who knows more about hormones than I do would have answered Dr. P. M. F. Bishop's letter (*Journal*, August 13, p. 374) and expressed doubts, which I believe to be fairly widely held, about the complete harmlessness of pregnyl. After all, as it is used to procure a permanent result in the descent of the testicle, the argument that it is quite safe because all hormone effects are transient does not entirely reassure me. My medical friends tell me that neither insulin nor thyroid extract is entirely harmless; in fact that rash use of the latter may disorganize for a long time the entire chemistry that has been stimulated. The closest analogy of all seems to me to be with the growth hormones: supposing they were used in a developing

child to promote skeletal overgrowth of the degree of the genital hypertrophy often seen after pregnyl, would one be entirely confident that no harm had been done?

As to Mr. R. C. Brock's letter (August 20, p. 423), it seems a trifle hard to be accused of "flogging a point to excess" (see H. W. Fowler on Metaphors) when all I have done is to say to a succession of critics that I wish they would read my paper carefully before attacking it. Had Mr. Brock followed this apparently uncommon course he would have seen that we are in complete agreement on the subject of the superficial inguinal ectopic testis. Like him I mentioned that it was "well recognized by certain workers"; like him I referred to the work of a respected senior in regard to it. The rest of my paper was about something quite different, which is possibly original: the superficial inguinal pouch, the excursions of normal and abnormal testicles into it, and the differing prognosis of the different positions.

I cannot quite see why he should say that my suggestion that some (not, as he says, most) examiners do not recognize the superficial inguinal ectopia is grossly unfair, when in his next sentence he admits the same thing. And surely it is unkind to suggest that they expect from unfortunate examinees a piece of information that is not in the textbooks they write or recommend.

As a final contribution to this correspondence, which has both amused and instructed me, I would like to say that if anyone can prove to me upon an actual case that any of my statements are wrong I shall willingly admit it in these columns.—I am, etc.,

London, W.1, August 22. DENIS BROWNE.

Sulphonamide Chemotherapy in Gonorrhoea

SIR,—I hope you will allow me to congratulate Dr. G. L. M. McElligott and Mr. A. J. Cokkinis on their paper in the *Lancet* of August 13. I, with all who have on them the constant harassment of gonorrhoea cases, feel much in their debt for the long patient care, clinical acumen, and obviously unremitting labour they have given to observing the effects of sulphonamide drugs in gonococcal infections. Their analysis supports their confidence in that drug; and for my part, should I again use sulphanilamide for gonococcal infections, I shall follow their technique. Indeed, they have persuaded me of its superiority to that I had used once upon a time (*Brit. J. vener. Dis.*, **14**, 1, 1938).

I am sorry to read (*British Medical Journal*, August 20, p. 424) they feel that my letter to you of August 6 may give an erroneous impression of both the efficacy and toxicity of uleron. As to toxicity, it actually ought not to—not to the critical reader. For my letter did state doses, and spacing of doses, given to 212 cases of gonorrhoea in the male over a continuous period of seven months. As to efficacy, they find it unfortunate that my claim for uleron's being more effective in gonococcal infections than sulphanilamide was not supported by figures. Of course, in my brief letter to you I gave no analysis of figures. I did state, however, the number of cases treated with uleron and the number I had treated with sulphanilamide. Yet am I heartened to note that in their paper, referred to above, Dr. McElligott and Mr. Cokkinis did not support their "definitely" unfavourable opinion of uleron by figures, except, like myself, to give a number of cases—"over 150 cases." Furthermore (let us be accurate as well as critical!), I also wrote "in my hands." I am sure I may count on most readers' understanding that "in my hands" meant also in this clinic, with this sort of men—seamen, firemen, stewards, stevedores, and dockers. They are a hearty, intelligent, independent-minded, and matey lot; not backward in discussing and commenting on their treatment and its effects.

I am sorry I must decline to follow the red-herring trail of "final cures" so temptingly laid by my friends Dr. McElligott and Mr. Cokkinis. I agree with them that most of my patients are "seamen," and that these seamen *may* have developed their neuritis after their return to sea. I wonder if Dr. McElligott and Mr. Cokkinis will agree with me that these seamen may *not* have developed any neuritis after their return to sea? In fact, Sir, the majority of them sail from and return to this port at regular intervals of time. They are matey, and do, many of them, blow in again after two to four months' voyage—to report relapse or no relapse; or even "neuritis" or *no* neuritis!—I am, etc.,

Albert Dock Hospital, E.16. H. M. HANSCHELL.

B. welchii Infection after Abortion

SIR,—In the *Journal* of August 6 (p. 279) three cases of *Cl. welchii* infection following abortion were described by Drs. R. Y. Dawbarn and Bryan Williams. It may be of interest to record a case of *B. welchii* infection which came under my care some years ago and was reported elsewhere at the time.

A woman aged 26 intended to procure abortion herself by making an injection, with the result that a large haemorrhage occurred two days later, causing abdominal pain and rigor. On admission to hospital the patient had no peritonitic symptoms at all. Her temperature was normal, the pulse slightly raised. After packing the uterus with gauze soaked in iodine-glycerin, the foetus of a four months' pregnancy was expelled spontaneously; the placenta, which was necrotic, had to be removed manually. When the uterus was emptied the patient felt absolutely all right. Ten hours after admission, however, an embolic attack occurred from which she recovered under morphine. Twenty-six hours after admission another embolic attack set in, followed by death.

No doubt an infected thrombosis existed (as had to be assumed from the rigor which the patient admitted) but no general septicaemia. This case, from the clinical point of view, would not have been of special interest had not the post-mortem examination shown a most remarkable picture:

Twenty-four hours after death the body of the patient was unrecognizable, and had the appearance as if she had been drowned, with widespread oedema, emphysema, and haematomata. The abdomen had swollen to twice its size, the skin on chest and abdomen was covered with discoloured blisters, which discharged a gas with an obvious smell of sulphuretted hydrogen. The skin everywhere, especially over the chest, gave a peculiar crackling sensation. Gas escaped also from the abdominal cavity. The spleen was about twice the normal size; the uterus, which felt like a snowball, showed no mechanical injury, nor did the vagina.

The cultures made from the spleen, endometrium, and heart valves anaerobically showed a growth of *B. welchii* after ninety minutes and distinct gas formation. In the vessels and lymph spaces of the uterus, at the site of the placenta, in the liver and spleen there were great numbers of Gram-positive bacilli which could be recognized as *B. welchii*. The embolus of the arteria pulmonalis showed an immense number of gas bacilli and a small number of diplococci and streptococci.

What makes this case so remarkable is that during life no gas-gangrene sepsis existed. There was no fever, no peritonitis, and no local gas production such as

crepitation of the uterus. The clinical picture of a typical gas-gangrene sepsis—jaundice, cyanosis, and scanty dark-brown urine as a result of an extensive haemolysis—was absent. The gas-gangrene sepsis can only have arisen after the second embolic attack; lack of oxygen in the blood after the second embolism made it possible for the *B. welchii* to spread in the dying body.—I am, etc.,

London, N.W.6, August 22. ERNST FRIEDMANN.

Snake Venom for Oral Haemorrhage

SIR,—A patient came to me for extraction of the second and third upper molars on the right side and second upper right premolar, all of which were septic with alveolar abscesses. She had, however, a very large cavernous angioma of the right cheek extending over the upper gum in the area of the septic teeth. When she was excited or nervous the gum and the whole side of the face pulsated. I removed the teeth in hospital under a general anaesthetic, and the sockets bled profusely. Ordinary pressure would not stop the haemorrhage. Packing with adrenaline tape and heavy pressure reduced the haemorrhage but did not stop it, so snake venom in the form of stypven was applied. This, however, did not completely stop it. The treatment was applied to the molar sockets. The premolar socket, which was the worst bleeding area, was plugged with stypven soaked in adrenaline tape, and the haemorrhage stopped immediately; when this was applied to the molar sockets they also stopped bleeding.

A year ago I was called to a haemophiliac after multiple extraction under gas and found the same thing. Stypven on ordinary gauze tape or cotton-wool was not so efficacious as the venom plus adrenaline.—I am, etc.,

R. F. KAYE WEBSTER, L.R.C.S., L.D.S.

Berwick-on-Tweed, August 12.

"Psychosomatic Illness"

SIR,—May I be allowed, before this correspondence closes, to refer back to the original contention of Dr. James L. Halliday (*Journal*, July 2, p. 11) that psychogenic illness judged by screen symptoms is on the increase and is a result of noxious psychological factors in the environment that can be rectified. There is considerable reason for a psychiatrist to doubt the interpretation put on the psychological diagnosis; the more so, as Dr. Halliday previously pointed out, that he approached it as physician (fortified by statistics) with no special claim to a psychiatric technique.

Dr. Halliday's cases of gastritis, rheumatism, and debility may well be on the increase, but so is the recognition of psychological facts by practitioners. He should have recognized that every individual, if the surface be scratched, will be found to have fairly marked anxiety, obsessional, or regression "systems" in his psyche. He may be mistaking a discovered substrate along with a somatic disturbance for a neurosis proper. I have reason to believe that this is the case, from a recent independent and detailed examination (by psychiatric interview) of over a hundred workless and an equal number of employed men (to be published elsewhere); and it was not difficult to determine what Dr. Halliday would have called hysteria, anxiety, and depressive states in over 50 per cent., but the control series showed these to be largely "systems," and less than a quarter showed actual neurotic illness. This is not to deny that organic conversions do occur, but the discovery of anxiety, etc., in rheumatism or dyspepsia does not make for a psychosomatic illness *sui generis*.—I am, etc.,

The University, St. Andrews, August 16, P. LIONEL GOITEIN.

Holiday Colonies for Fitness

SIR,—No one realizes more fully than the general practitioner the lack of physical fitness and the prevalence of unnecessary invalidism produced by improper physical and mental hygiene. Better housing conditions and improved sanitation have vastly improved the general health of the community, but the knowledge of how most satisfactorily to live under these improved conditions is still very deficient. How to bring up healthy families, how to deal with physical development after school age, and how to keep in health in advancing years are matters which lack guidance. The habits of improper living are quickly formed and difficult to alter; ignorant fears difficult to eradicate.

The physical trainer, important as he is, should not attempt to take the whole burden of physical improvement on himself without the aid of the medical profession. He is not capable of doing this, nor will the general public, or at least the more timid section of it, trust him to do so. How best to get fit and how to keep fit, what and when to eat and drink, how best to obtain mental relaxation from daily work, are all things which can only be readily learnt by the practical experience of a definite routine. To this end permanent and self-supporting holiday colonies should be created, available both for families and for individuals. Their attractions and value for money should be made so outstanding that the educational side, which ought to be compulsory, would be accepted even by the obstinate supporters of freedom of action. Compulsory medical examination should be one of the first "hardships" enforced before any programme of physical exertion was laid down. I am certain that if the means could be forthcoming to encourage an experiment of this kind, good and permanent results would immediately follow.—I am, etc.,

Banbury, August 10. C. J. L. WELLS, B.M., Ch.B.

Medical Evidence at Inquests

SIR,—Though very ignorant of the habits of coroners, I cannot but think, and hope, that the following action on the part of one is unusual. I was summoned last week to a brook where a little boy was said to be drowned. I found a police officer and a member of the Fire Brigade already on the spot. They were doing artificial respiration and giving oxygen and CO_2. Though I was told the child had been "drained" I found the mouth full of foam and food, and on raising the body a very considerable quantity of food and water poured out. Another (local) medical man arrived and gave coramine, etc., but after another hour we had to pronounce the case hopeless. Neither his nor my evidence, which might well have been informative, was called at the subsequent inquest. A medical man from some distance away was employed for this purpose, and I am told that this is the local custom. Surely this cannot make for "the whole truth"?

I wrote to the coroner concerned, asking to be informed why my evidence had not been called, but so far have not had a reply.—I am, etc.,

Earlswood, Surrey, August 18. J. L. BARFORD.

London Emergency Bed Service

SIR,—I would like to express my appreciation of the London Voluntary Hospitals Emergency Bed Service. I understand that it has not yet received the full measure of support it so richly deserves. The staff are always refreshingly courteous and do their best to assist one in every possible way.

I recently had a patient with an acute generalized eczema for which institutional treatment was essential. As this type of case is difficult, if not impossible, to get into the average teaching hospital, I applied to the Emergency Bed Service. After three-quarters of an hour's telephoning they got him a bed at last. They rang up, in all, about ten hospitals. Anyone who has tried to do this himself during a busy morning will realize the extreme value of such a service.

The scheme is unique and brilliantly simple; its success should be assured by every doctor giving it his support.—I am, etc.,

London, N.4, August 20. E. M. G. GALTON.

Obituary

H. R. JEREMY, F.R.C.S.

Ophthalmic Surgeon and Lecturer on Ophthalmic Surgery, the London Hospital

Mr. Harold Rowe Jeremy, who died on August 16 after a long illness, was well known as an ophthalmologist in London. A native of Merthyr Tydfil he studied medicine at University College, London, the London Hospital, and St. Bartholomew's, and qualified as M.R.C.S., L.R.C.P. in 1901. He early decided to take up the study of diseases of the eye, and his first post was that of ophthalmic house-surgeon at the London Hospital, after which he became chief clinical assistant at Moorfields, surgeon to the Western Ophthalmic Hospital, and ophthalmic surgeon to the Queen's Hospital for Children and Eastern Dispensary. Mr. Jeremy returned to the London Hospital as assistant ophthalmic surgeon and lecturer in ophthalmology in the Medical College. He had taken his F.R.C.S. in 1911. He was also consulting ophthalmic surgeon to St. Peter's Hospital, to the Claybury Mental Hospital, and to the Walthamstow, Wanstead, and Leyton Hospital. His writings included papers on perithelioma of the orbit, birth injuries of the fundus oculi, cataract in mongolism, and retinal detachment, read to the Ophthalmological Section of the Royal Society of Medicine and published in the *Proceedings*, and on cataract following thyroidectomy, published in the *British Journal of Ophthalmology*. Mr. Jeremy joined the British Medical Association in 1911.

Dr. JOHN CUTHBERT GEORGE DICKINSON, who died in a nursing home at Torquay on August 14, had practised for the past twelve years in partnership at Braunton, North Devon. The second son of the late William George Dickinson of Roos, East Yorks, he studied medicine at Guy's Hospital, and took the English Conjoint diplomas in 1924, followed by the M.B., B.S.Lond. degrees in 1926, after two years as house-surgeon to the Taunton and Somerset Hospital and to the North Devon Infirmary. Dr. Dickinson became honorary physician to the Barnstaple and North Devon Dispensary, and medical officer to the Braunton Child Welfare and Maternity Centre; he was also divisional surgeon to the St. John Ambulance Brigade and took a prominent part in its activities. He took a warm interest in the local affairs of Braunton and for some time had a seat on the Parish Council. He joined the British Medical Association in 1929 and was an active member of the North Devon (Barnstaple) Division, serving as its representative on the Branch Council for the last four or five years, and as chairman of the Division in 1933–4.

The following well-known foreign medical men have recently died: Dr. A. CESARIS DEMEL, emeritus professor of morbid anatomy at Pisa, aged 72; Dr. A. GIANELLI, an eminent psychiatrist of Rome, aged 73; Professor A. BONANNE, a prominent pharmacologist of Rome, aged 68; Dr. WALTER JACOBI, director of the clinic for psychiatry and nervous diseases at Greifswald, aged 48; and Dr. MARTIN HERMAN, honorary professor at Brussels University, honorary director of the Hainaut Institute of Hygiene and Bacteriology, and member of the editorial staff of *Le Scalpel*.

Medico-Legal

THE LIMITS OF A GUARANTEE

A case of some importance to hospital almoners[1] was decided in the Ilford County Court on March 28 by Judge Davies, K.C. A young man was admitted to a hospital for acute jaundice, and his father signed a guarantee that he would pay the patient's fees. The form stated that the guarantee was for payment in accordance with rules printed on the back of the form. These laid down that the duration of a patient's stay was usually limited to eight weeks, and that the days of admission and discharge were counted as one day, and spoke of the responsibility of the medical officer for the patient's treatment "during his stay" at the hospital. The patient left after about five weeks, and there was nothing in the evidence to show that he was expected to return. He attended out-patients. A fortnight later the physician in charge told the father that the son should go back into hospital to have some fluid removed, and so he was readmitted. He was never discharged again, and died of his original complaint four months later. The accounts for this second stay were rendered to the father, who paid some of them but left a balance unpaid. The hospital sued him for the balance, but lost the action.

By the Statute of Frauds a guarantee must be in writing, and so the hospital, in order to succeed, had to prove that the guarantee signed in respect of the first visit applied also to the expenses of the second. His Honour explained that each guarantee has to be construed not necessarily literally but in the light of the surrounding circumstances. The wording of the document did not specifically state a period, but it pointed, he thought, to an intention by the parties that the guarantee should be limited to the expenses incurred from the admission of the patient until he should leave hospital, unless his departure was intended to be merely temporary, which it was not. The document contemplated a single stay at the hospital, and the father intended to guarantee this stay only. If the guarantee applied also to any subsequent stay, he considered, it would expose the guarantor to a possible liability which it was most unlikely that the hospital would seek to impose or the guarantor to accept. The patient might get better and leave the hospital for a time, and then get worse and return again and again for many years. If the guarantor were held liable for all these visits, his liability might extend to hundreds of pounds and last the greater part of his life. The language of the document did not indicate such a conclusion, but rather pointed the other way. The written guarantee, therefore, did not extend to the second visit, and no verbal or implied guarantee could be valid.

Counsel for the hospital tried to establish that on the second visit the father had requested the hospital to accommodate his

[1] King George Hospital *v.* Meech. L. J. Newsp., C.C.R., 1938, **5**, 208 (July).

son, and had undertaken responsibility for the cost. The learned judge, however, found that no such undertaking could be implied, although the mother had agreed to the charge and the father had paid some of the total. As the son had been admitted on the first occasion on a guarantee and the regulations of the hospital required a guarantee, and nothing had been said to suggest that he was now being admitted on different terms, the father's liability remained as it had been on the first occasion. He did not think that either party supposed that the first guarantee was applicable to the second visit, though the hospital authorities may have thought that the father's conduct amounted to a new, and this time an implied, contract of guarantee—which, of course, cannot be enforced at law.

A finding of a county court judge in law does not bind any court. The decision, however, points the moral that an almoner should insist on a fresh guarantee every time a patient is readmitted.

The Services

MILITARY OPERATIONS IN WAZIRISTAN

The King has approved the following awards in recognition of valuable services rendered in the field in connexion with the operations in Waziristan during the period September 16 to December 15, 1937:

C.B.E. (Military Division)

Colonel RICHARD ERNEST UPTON NEWMAN, O.B.E., *M.C.*, M.B., Ch.B., R.A.M.C. (now retired pay).

M.B.E. (Military Division)

Captain VICTOR MANSFIELD ALBUQUERQUE, F.R.C.S., I.M.S.

D.S.O.

Lieutenant-Colonel STANLEY ARNOTT, M.D., R.A.M.C.

M.M.

Assistant Surgeon, 3rd Class (now Lieutenant) MICHAEL CLARENCE ST. JOHN CONDILLAC, M.R.C.S., L.R.C.P., Auxiliary Force Medical Corps, India.

Mentioned in Dispatches

The names of Colonel R. E. U. Newman, C.B.E., *M.C.*, M.B., Ch.B., late R.A.M.C. (now retired pay); Lieutenant-Colonel S. Arnott, D.S.O., M.D., R.A.M.C.; Captain Richard Ernest Waterson, M.B., Ch.B., R.A.M.C.; and Jemadar Gurbachan Singh Sethi and Jemadar Sant Singh, Indian Medical Department, have been brought to notice by His Excellency the Commander-in-Chief in India for distinguished services rendered in connexion with the operations in Waziristan during the period September 16 to December 15, 1937.

DEATHS IN THE SERVICES

Dr. WILLIAM DELANO WALKER, serving with the R.A.F. Medical Branch, lost his life when an aeroplane, piloted by Lieutenant E. J. Boyle of the King's Own Scottish Borderers, crashed near Richmond, Yorkshire, on August 16, both officers being killed. Dr. W. D. Walker was an Australian, the son of a surgeon, and had served in the Australian Army Medical Corps. He graduated at Adelaide University as B.Sc., with honours, in 1923, and as M.B., B.S. in 1925. After working as house-surgeon and physician at the Adelaide General Hospital and Children's Hospital he came to England, where he filled the post of resident at the Great Northern Hospital, Holloway, before joining the Royal Air Force as a civilian medical officer. He was a Fellow of the Zoological, Geographical, and Photographic Societies, and a member of the British Medical Association, which he joined at the beginning of 1926.

A correspondent writes: Dr. Walker was a man of great ability and exceptional versatility. A promising academic career was interrupted during the war, and he enlisted in the Australian Army Medical Corps when a second-year medical student. He next came to England in 1929, and since then had spent much of his time in fitting himself for what he had hoped to make his life-work—service with the Australian Aerial Medical Service, then only in its infancy; but he knew it would develop into an essential feature of national life. In London he held resident posts in twelve different hospitals and did extensive postgraduate study in many specialized centres. At the invitation of Professor Jameson, dean of the London School of Hygiene and Tropical Medicine, he gave the first public lecture on "The Flying Doctor in Australia," with Air Vice-Marshal Sir David Munro in the chair. Acting on Sir David's advice, he sought to gain experience of the medical aspect of aviation while attached as a civilian medical officer in the R.A.F., and had spent nearly four years in this capacity. He was a keen pilot, and also spent some time in visiting aircraft factories and interesting the experts in the possibilities of the "flying hospitals" which he envisaged for the future.

Lieutenant-Colonel ROBERT LENDON ARGLES, R.A.M.C. (ret.), died at Hythe on August 2, aged 65. He was born on August 24, 1872, was educated at St. Mary's Hospital, and took the L.S.A. in 1899. After acting as resident casualty officer at St. Mary's Hospital he entered the Royal Army Medical Corps as lieutenant on April 25, 1900, attained the rank of lieutenant-colonel on December 26, 1917, and retired on June 28, 1922. He served throughout the South African War, 1899 to 1902, when he was employed in operations in Cape Colony and in the Orange River Colony, and received the Queen's and King's medals, with two clasps to each. He also served in the war of 1914–18. After retirement he was employed at Hythe. He had been a member of the British Medical Association for seventeen years.

Universities and Colleges

SOCIETY OF APOTHECARIES OF LONDON

The following candidates have passed in the subjects indicated:

SURGERY.—J. F. Cooper, T. L. B. Iredale, J. R. F. E. Jenkins, K. R. P. Kent, I. J. Mathias, C. R. Morgan, T. I. Palmer, E. F. G. Stewart, J. Whitehead.

MEDICINE.—J. F. Cooper, E. K. Gardner, J. C. Gregory, B. M. Hulse, N. A. Jevons, J. A. V. Shone, A. B. Taylor.

FORENSIC MEDICINE.—J. F. Cooper, E. K. Gardner, J. C. Gregory, B. M. Hulse, N. A. Jevons, J. A. V. Shone, A. B. Taylor.

MIDWIFERY.—J. V. Braithwaite, J. F. Cooper, E. K. Gardner, G. R. Green, J. A. L. Leeming, J. Lieber, N. W. R. Lucas, A. C. Rogers, T. I. Thomas, J. W. Weston.

The diploma of the Society has been granted to J. F. Cooper, J. C. Gregory, B. M. Hulse, I. J. Mathias, and E. F. G. Stewart.

Medical News

The annual congress of the Chartered Society of Massage and Medical Gymnastics will be held at the London School of Economics, Houghton Street, W.C., from September 19 to 23. The opening address on the morning of September 19 will be by Professor Henry Cohen on "The Treatment of Disease"; in the afternoon of the same day Mr. R. Ollerenshaw will lecture on "Pes Cavus." Lectures on subsequent days will be given by Mr. P. J. Verrall, Dr. W. Brockbank, Mr. T. T. Stamm, Dr. N. B. Capon, and Mr. C. Lambrinudi. The Founders' Lecture will be given this year by Professor D. M. Blair, on "The Anatomy of Movement." Further details may be obtained from the Secretary of the Chartered Society, Tavistock House (North), Tavistock Square, London, W.C.1.

The next Dutch-Belgian Congress of Neurology and Psychiatry will be held in Ghent from September 23 to 25. Further information can be obtained from Dr. A. Leroy, 18, Rue Beekman, Liége.

A course in electrocardiography and other graphic methods of examination will be held in the Balneological University Institute at Bad Nauheim from September 19 to 22.

The fourth annual meeting of German neurologists and psychiatrists will be held at Cologne from September 24 to 28. Further information can be obtained from Dr. Brügelmann, Hohenzollernring 75, Cologne.

A general meeting of the International Therapeutical Union, founded in 1934, will be held in Paris on October 12 under the presidency of Professor Loeper. Further information can be obtained from Dr. G. Leven, Rue de Téhéran 24, Paris 8e.

The acre of flat roof on the new building of Messrs. Derry and Toms in Kensington High Street is covered with the beautiful Derry Gardens. They have been thrown open since completion for the benefit of hospitals and nurses' institutions in London, and over £4,000 has already been received. During the week Monday, September 5, to Saturday, September 10, they are to be seen by visitors from 9 a.m. to 6 p.m. on behalf of St. Bartholomew's Hospital. There is no charge for admission, but a contribution of one shilling and upward may be given to the nurses in attendance.

A sanitary code regulation prohibiting the importation, breeding, and sale of birds of the parrot family went into effect in New York State on June 1 and a similar regulation in New York City on July 1.

In 1937 11,806 cases of small-pox were notified in the United States, as compared with 7,044 in 1936. The thinly populated North-Western States were most affected. The character of the attack was generally mild.

An institute for instruction in nutrition has been founded in Berlin under the direction of Professor S. Bommer.

The office of the Faculty of Medicine of the University of Birmingham has now been transferred from the University, Edmund Street, to the Medical School, Hospitals Centre, Edgbaston, Birmingham, 15. Telephone No. Selly Oak 1162.

EPIDEMIOLOGICAL NOTES

Poliomyelitis

The incidence of acute poliomyelitis continues to rise, 81 cases having been notified in England and Wales, compared with 61 in the previous week: the figure for the corresponding week last year was 25. In London the number notified was 3, the same as last week, while in Scotland notifications rose from 9 to 15. Of the 81 cases in England and Wales more than 2 were reported during the week in: Braintree (rural) 5, Braintree (urban) 6, Brownhills (Staffs) 3, Birmingham 3, Dunmow 5, Grimsby 4, Kingston-upon-Hull 4, London 3, Reading 3, Swansea 8, Worthing 3. Last week (ending August 20) reports came to hand of 19 cases in which the diagnosis is confirmed: Braintree 6, Gainsborough 3, 2 each in Hale (Cheshire), Nottingham, Colchester, Portsmouth, and 1 each in Whitwell (Derbyshire) and Halstead (Essex); in the same week 1 death was reported in each of the following towns: Braintree, Cowley (Oxford), Farnham, Grimsby, Hadleigh, Halstead, Portsmouth, South Shields.

Typhoid Fever

The Farnworth (Lancs) outbreak of typhoid fever appears to be at an end, no cases having been notified since August 17. At August 23, 41 persons had been affected, of whom 5 have died. A peculiar feature of the outbreak has been that the cases, with one exception, were restricted to about half a dozen avenues on the New Bury Housing Estate. So far the manner in which they were infected has not been ascertained.

Diphtheria and Scarlet Fever*

Notifications of diphtheria in England and Wales during the week under review rose from 825 to 892: the chief centres in which increases were recorded are: Birmingham 25 (14), Cardiff 8 (4), Easington 12 (6), Kingston-upon-Hull 11 (9), Lambeth 11 (8), Newcastle 9 (7), Salford 13 (10), South Shields 16 (12). A high incidence of diphtheria, which shows no signs of diminishing, has been encountered in South Shields: since the beginning of the year 250 cases have been notified with 45 deaths, compared with 128 cases and 19 deaths during the whole of last year. In the week under review 16 cases were reported, compared with 12 in the previous week; while the occurrence of 3 deaths in the week indicates that the infection is of a severe type. In London there was an increase from 113 to 115 in the week under review—Battersea 5 (1), Bermondsey 4 (0), Hampstead 2 (0), Lambeth 11 (8), Paddington 7 (2), Poplar 9 (3), Shoreditch 7 (5). There was a drop in the notifications for Scotland—113 as against 126—but in Eire a slight increase was recorded—43, compared with 39 in the previous week; in Northern Ireland, on the other hand, a considerable decrease was reported, 13 cases being notified, compared with 20 in the previous week. Deaths from diphtheria in the 126 Great Towns of England and Wales rose from 16 to 21 and in London from *nil* to 1; of the 21 deaths recorded in the 126 Great Towns 2 each occurred in South Shields (2), Leicester (1), and Wolverhampton (0). In the 16 principal towns of Scotland there were 2 deaths from diphtheria—1 each in Edinburgh and Dundee. There was an appreciable drop in the notifications of scarlet fever in England and Wales during the week—1,129, compared with 1,248—and in London also—107, as against 112: these figures were well below the median values for the last nine years.

* Except where otherwise mentioned figures in parentheses refer to the week preceding the one under review.

Primary and Influenzal Pneumonia

There was a slight increase in the notifications of primary and influenzal pneumonia in England and Wales during the week—429, compared with 423 in the previous week—while in London the incidence continues to drop—33, compared with 40 recorded in the previous week. Both these figures are below the median values for the last nine years.

Measles and Whooping-cough

There was only 1 death (in Kingston-upon-Hull) from measles in the 126 Great Towns of England and Wales during the week, compared with 3 in the previous week. The average daily admissions to the L.C.C. fever hospitals were 7 (6); in the metropolitan boroughs in which measles is notifiable notifications of measles dropped in five, remained the same in two, and rose in four—Bermondsey 3 (0), Greenwich 4 (2), Hampstead 1 (0), and St. Pancras 13 (8). In Scotland notifications fell from 66 to 49 in the week under review; of the 49 cases 14 (24) occurred in Kirkcaldy, 12 (22) in Dunfermline, and 5 each in Edinburgh (10) and Greenock (2). There was 1 death (in Dunfermline) from measles in the 16 principal towns of Scotland. In the 126 Great Towns of England and Wales there was 1 death (in Lincoln) from whooping-cough during the week, compared with 5 recorded in the previous week. In Scotland 52 (27) cases of whooping-cough were notified—41 (21) in Glasgow—and 5 (3) deaths (all in Glasgow).

Cholera

During the week ended August 13, 1,066 cases of cholera and 314 deaths from this disease were reported in Shanghai, and in Hong Kong 39 cases with 17 deaths. During the four-week period ended August 13, 2,957 cases were recorded in the International Settlement and French Concession at Shanghai, compared with 2,176 in the previous four-week period (June 19 to July 16). In the same period there was a decline in the incidence of cholera in the ports of South China (Swatow, Canton, Hong Kong, and Macao). In British India, 5,342 cases with 2,306 deaths were reported in the Central Provinces, 620 cases with 192 deaths in Bombay (Presidency), 741 cases with 299 deaths in the United Provinces. The epidemic in the Central Provinces, which appeared earlier than usual this year, does not yet seem to have reached its peak. The number of cases increased considerably during the four weeks ended August 13, reaching 20,029 cases, corresponding to a morbidity rate of 1,679 per 100,000 population (annual basis). During these four weeks the incidence of the disease declined in the Punjab and the United Provinces (Upper Valley of the Ganges), and in Madras (Presidency).

No. 32.

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended August 13, 1938.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for : (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland. Median values for the last 9 years for (a) and (b).

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for : (a) The 126 great towns (124 in 1937) in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns (9 in 1937) in Northern Ireland.

A dash — denotes no cases ; a blank space denotes disease not notifiable or no return available.

Disease	1938					1937 (Corresponding Week)					1929-37 (Median Value Corresponding Weeks)	
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)	(a)	(b)
Cerebrospinal fever	14	3	12	1	—	19	1	5		2		
Deaths		1	1				2	2				
Diphtheria	892	115	113	43	13	903	91	138	42	22	798	116
Deaths	21	1	2	2	—	22	—	4	2	—		
Dysentery	21	7	36		—	25	2	14		—		
Deaths				—	—				—	—		
Encephalitis lethargica, acute	3	—	1		—	1	—	1	1	—		
Deaths		1					2					
Enteric (typhoid and paratyphoid) fever	24	1	17	4	2	65	1	5	4	1	63	
Deaths	—	—	—	—	—	1	—	—	—	—		
Erysipelas			53	5	2			53	3	6		
Deaths		—					—					
Infective enteritis or diarrhoea under 2 years												
Deaths	59	18	13	6	4	41	14	17	9	8		
Measles			49		2			23		—		
Deaths	1	—	1	2	—	3	—	—	1	—		
Ophthalmia neonatorum	95	12	14		—	104	13	45		—		
Deaths												
Pneumonia, influenzal ‡	429	33	—		2	465	36	4	1	4	452	35
Deaths (from Influenza)	12	3	2	—	1	14	1	—	—	—		
Pneumonia, primary			5	9				86	7			
Deaths		7		14	2		8		10	6		
Polio-encephalitis, acute	6	—				2	—					
Deaths		—					—					
Poliomyelitis, acute	81	3	15	3	—	25	3	—		1		
Deaths		—					—					
Puerperal fever	3*	3	8	4	—	35	1	17	2	—		
Deaths		—					1†					
Puerperal pyrexia	192	19	14		11	152	22	15		—		
Deaths												
Relapsing fever	1	—			—	—	—	—		—		
Deaths												
Scarlet fever	1,129	107	253	50	60	1,171	101	310	58	69	1,314	217
Deaths	—	—	1	—	—	3	—	—	1	—		
Small-pox	—	—	—		—	—	—	—		—		
Deaths	—	—		—	—	—	—		—	—		
Typhus fever	—	—	—	—	—	—	—	—	—	—		
Deaths				—	—				—	—		
Whooping-cough			52		18			50		7		
Deaths	1	—	5	1	1	13	3	4	1	1		
Deaths (0-1 year)	248	36	66	22	10	255	46	75	37	23		
Infant mortality rate (per 1,000 live births)	41	29				43	38					
Deaths (excluding stillbirths)	3,735	687	539	148	103	3,627	711	536	174	128		
Annual death rate (per 1,000 persons living)	9.2	8.7	11.0	10.0	9.1	9.0	9.0	11.0	11.9	12.3		
Live births	6,813	1,311	828	411	226	7,006	1,235	933	372	234		
Annual rate per 1,000 persons living	16.7	16.7	16.9	27.8	20.0	17.3	15.6	19.1	25.4	22.4		
Stillbirths	278	30				241	42					
Rate per 1,000 total births (including stillborn)	39	22				33	33					

* After October 1, 1937, puerperal fever was made notifiable only in the administrative county of London.

† Death from puerperal sepsis.

‡ Includes primary form in figures for England and Wales, London (administrative county), and Northern Ireland.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, W.C.1.

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QUERIES AND ANSWERS

Cleaning Slides for Blood Films

"J. S. M." would be grateful for a really efficient method of cleaning slides for blood films, to prevent the mosaic appearance consequent on grease.

A Strict Vegetarian Diet

"W. H. S." writes: The great interest of the note by Sir Leonard Hill in your issue of August 20 (p. 417) prompts me to inquire on the following points. (*a*) Do the boy's parents also subsist on the diet enumerated? (*b*) Does the family live an entirely sylvan existence, or does bread-winning in a town or city play a part in, say, the father's life? Having regard to the experience in the late war when a meat dietary is said to have assisted in resisting the ill effects of the noise, etc., of bombardment, it is interesting to speculate how the diet enumerated in the article would enable an individual to support a working life in a large city.

LETTERS, NOTES, ETC.

Adrenaline for Wasp Sting

Dr. F. O. TAYLOR (Coldingham) writes: A young woman came to consult me on August 18; she was almost unrecognizable—flushed, swollen about the face, and very embarrassed, although she pluckily kept control. A wasp had stung her on the second finger of the right hand about three-quarters of an hour before, while she was picking up some goods in a baker's shop. The pulse was rapid and thready, and headache was rapidly becoming severe. I gave her ½ c.cm. of 1 in 1,000 adrenaline chloride (P. D. and Co.), and made a little further examination. The "stung" finger was twice the normal size, the neighbouring first finger was almost as big, and a red swollen ring was spreading over the back and palm of the hand. Normal sensation had almost left the worst part, but the patient said that she had a peculiar sensation of burning and swelling all over. There were groups of acute circular weals on the arm, and probably here and there all over the body. Vision was only slightly affected, though the eyes were bloodshot, and I imagine that sight would have been disturbed if the treatment had not taken almost immediate effect. She improved so rapidly that I thought all her troubles would soon be over: the weals were almost flat, and the "swelling" sensation was passing off. I allowed her to go home, and apart from a diffuse rash or blush with more itching, which was soothed by bathing in a cool bath made up with a lotion, the general symptoms had entirely disappeared the next morning. The sting was obviously very much more poisonous locally than usual; there was a patch about four inches round it, which reminded me more of the results of the attack of a "cleg" (horsefly).

Abortion and the Law

Dr. A. J. BROCK (North Queensferry), in the course of a letter on this subject, writes: Surely it is up to the medical profession to consider the wider sociological bearings of this problem. Obviously the law is now going to make it easier for doctors to practise abortion; they may do it if they consider that the prospective mother's health would otherwise be seriously jeopardized, and this clearly will afford our profession a much wider field for the operation, and will relieve them (as well as their clients) of many immediate anxieties. An urgent social symptom is thus relieved and tension temporarily relaxed. May I now suggest the wider sociological implications? History surely shows that the increasing practice of abortion and birth prevention has always accompanied disintegration of society. Indeed, infanticide itself is another almost inevitable aspect of the same process. I think it is time that the medical profession should wake up to the broad issues at stake.

Medical Aid in Spain

The honorary secretary of the Spanish Medical Aid Committee writes: Recent reports from Spain tell us of the magnificent way in which a modern hospital system is being evolved out of the emergency and improvised medical services of the earlier war days. We are very proud of England's share in this, for the Spanish people acknowledge with deepest gratitude and appreciation our nurses and doctors, our instruments and equipment, our ambulances and supplies. Unfortunately, we can never send enough. The need grows with each air raid, with every offensive. An *x*-ray apparatus is very badly needed for the blood transfusion service in Barcelona. They have now 14,000 donors on their lists, and all day and every day they have at least 200 contributing blood. These donors give their blood once a month. But by reason of malnutrition a large number of people in Barcelona and Eastern Spain are tuberculous. It is essential to make sure that blood is not taken from these people. In order to avoid this an *x*-ray apparatus for screening chests is an immediate necessity. This will cost £320, and we cannot supply it as we have not the money. May we appeal for contributions? It would be a splendid gesture if this *x*-ray apparatus could go out from the medical profession here to assist their colleagues in Spain. Cheques should be sent to the Treasurers, Spanish Medical Aid Committee, 24, New Oxford Street, W.C.1.

New Treatment for Coryza

At the East Sussex Quarter Sessions this week counsel for the prosecution is reported to have said that people "should realize that it was as easy to get rid of blackmail as of a cold in the head. They had only to go to the police."

Medical Golf

The ninth autumn meeting of the Sussex Medical and Dental Golfing Society will be held on the Brighton and Hove Golf Club's links on Sunday, September 18. In the morning singles against bogey will be played for the captain's prize, and in the afternoon there will be two-ball foursomes against bogey. Full details may be obtained from Mr. Harold Downer, 40, Wilbury Road, Hove, 3.

Corrigendum

In the brief medico-legal report headed "A Nurse is a Workman" in our issue of August 20 (p. 429) it was stated that a nurse was injured by the explosion of a tin of antiphlogistine. We are asked by the manufacturers of antiphlogistine to state that their preparation contains nothing of an explosive or dangerous nature, and that it is impossible for it to explode if used according to the directions.

Vaccine with Sulphanilamide for Gonorrhoea

Mr. A. J. COKKINIS and Dr. G. L. M. MCELLIGOTT write: We note that our article on "Sulphanilamide in Gonorrhoea," published in the *Lancet* on August 13, has been quoted in a circular emanating from the medical propaganda section of a firm of manufacturing chemists, referring to the combined use of vaccine with sulphanilamide. We wish to point out that all stock vaccines used in our clinic are prepared in the Inoculation Department of St. Mary's Hospital.